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Final Technical Report
February 1993

STEP STRESS TESTING OF RECEIVER/TRANSMITTER UNITS

Hughes Aircraft Company

Steve Burnett, David Huch, Larry James, Stephen Mueller,
Peggy Tran

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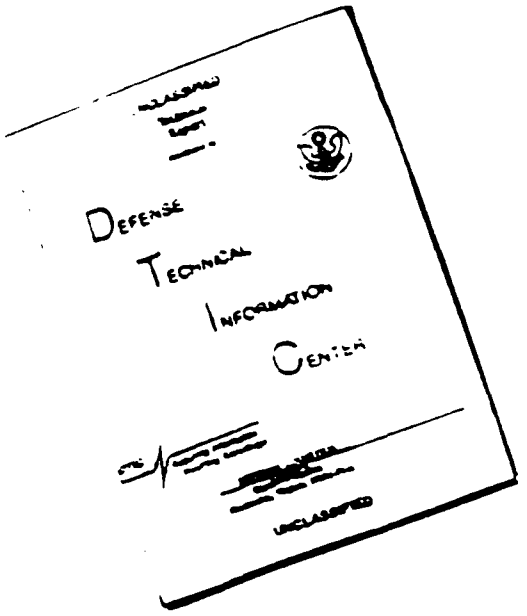

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13. ABSTRACT (Maximum 200 words)
This report has been prepared to summarize a test validation effort for an accelerated life testing model which uses a wide parametric Bayesian Analysis Methodology. Step stress testing was performed on seven (7) Joint Tactical Information Distribution System (JTIDS) Class 1 synthesizer - detector, radio frequency assemblies. Failure data and analyses are provided. The report addresses issues concerning how to demonstrate high reliability (Mean-Time-Between-Failure values of 10,000 hours or more) on procured Air Force systems without incurring excessive testing costs.

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1. INTRODUCTION

1.1 General. This test report is being prepared under Subcontract No. D000-07 in accordance with Para. 4.1.9 of the Revised Statement of Work for Task #9 dated 14 May 1991. The testing/analysis is part of an effort being conducted under prime contract No. F30602-89-D-0100 for Rome Labs. Modification No. 06 (23 August 1991) incorporated Delivery Order G0001 into the basic subcontract and provided partial funding. Modification No. 07 (10 September 1991) fully funded D/O G0001. Additionally, Hughes Aircraft Company internally funded a portion of the effort during the 4th quarter of 1991.

The project schedule is shown in Figure 1.1-1.

1.2 Scope. Since 1989, Hughes has participated on a Total Quality Management (TQM) panel with other industry and government representatives to attempt to resolve some of the issues concerning how to demonstrate high reliability (MTBF's of 10,000 hours or more) on procured Air Force systems without incurring excessive costs or putting a drain on personnel resources. The panel converged on a step-stress accelerated life testing (ALT) approach using a Bayesian modeling approach. Hughes Aircraft was tasked to establish a relatively short term step-stress testing method and conduct the testing on seven production (fielded) configuration Receiver/Transmitter (R/T) modules.

1.3 Applicable Documents.

1) MIL-HDBK-217 Rev. E	Military Handbook: Reliability Prediction of Electronic Equipment
2) CDRL J003-001A	R&D Test & Acceptance Plan FINAL

1.4 Test Objective. The objective of this test was to gather data for incorporation in an overall validation study of the ALT approach as applied to electronic units. More specifically, the test results using the team-developed ALT were compared with actual field results. This activity serves as one of three model validation efforts scheduled previously by the team.

2. ACCELERATED LIFE TEST (ALT) SUMMARY

2.1 Methodology. Historical data on the test article from both airborne and ground environments were used to evaluate the ALT approach. Estimates of the "prior" reliability of the unit at each stress step for both environments were based on MIL-HDBK-217 (ref. 1 above) failure rates computed at a benign environment adjusted for the appropriate component stress ratios. As part of the test effort, failed components were analyzed to identify failure cause. The failure causes were checked to determine whether the design limits of the unit were exceeded or whether correlation, if any, with field failure modes could be established.

After all units have either failed or survived the final stress step (constituting a single pass), an estimate was generated for both airborne and ground environments to compare with the corresponding estimates using historical failure data.

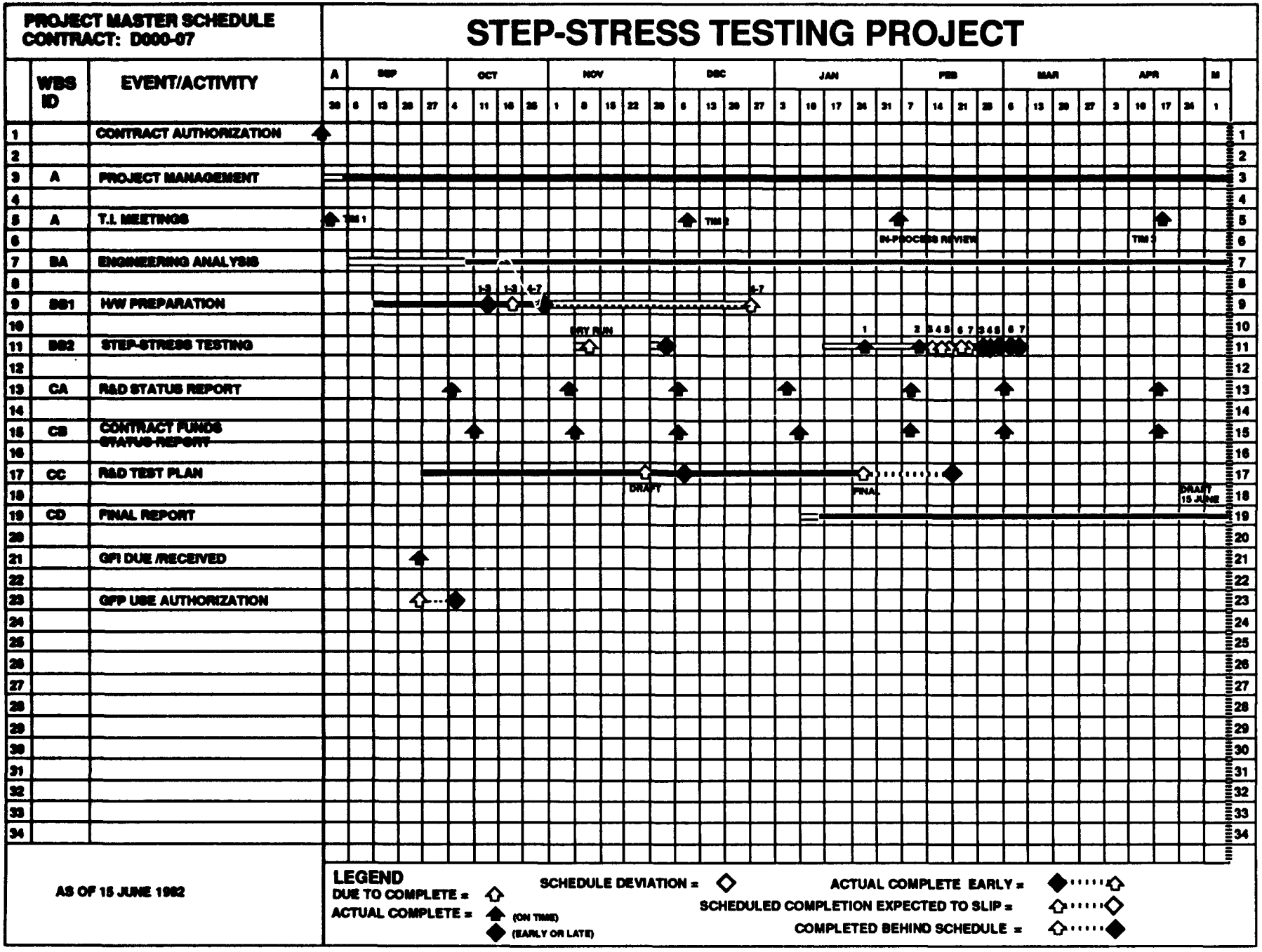

Figure 1.1-1 Project Schedule

The test items are residual production assets consisting of seven R/T units, hereafter referred to as Unit(s) Under Test (UUT). The units are production configuration identical to fielded units. Additionally, each UUT went through the same test and stress-screening as a production spare prior to being subjected to the step-stress testing. Each UUT was subjected to six cycles of powered and monitored temperature cycling at the next higher assembly level. Afterwards, each unit passed test at the next higher assembly and its own unit test (ref. 2 above) prior to being declared ready for step-stress testing. The overall Step-Stress Test Flow Diagram is shown in Figure 2.1-1.

2.2 Test Setup and Trial Run. A trial test of the step-stress testing was performed on a sample unit (not a UUT) during the November 1991 time frame. The information resulting from that trial test is contained in Appendix B and consists of the following:

- Text of Appendix D of the Test Plan (ref. 1 above), Trial Step-Stress Test Run
- Thermal Evaluation Test Journal
- Thermal Survey, Data Printout and Plots
- Test Data Sheets, Performance Monitoring
- Data Reduction, Tables and Plots
- Unit Modification & Equipment Setup

2.3 Conformal Coating Analysis. Severe discoloration of the conformal coating was observed on the UUT's after going through all test steps. An analysis was conducted following testing of the second unit to determine the integrity of the material; the results are contained in Appendix C.

2.4 Test Data/Results. The results of testing the seven UUT's is as follows:

UNIT	RESULTS
1	Passed all steps
2	Passed all steps
3	Passed all steps
4	Failed at Step 9
5	Failed at Step 10
6	Failed at Step 7
7	Failed at Step 10

The detailed test data/results are contained in Appendix D and consist of Step-Stress Test Data Sheets, data printouts, temperature plots, thermal log, and initial Trouble & Failure Report (if applicable).

2.5 Failure Analysis. The detailed failure analyses including photographs are contained in Appendix E.

3. RELIABILITY ANALYSIS

3.1 Prediction Methodology.

3.1.1 MIL-HDBK-217 Predictions. Reliability predictions were performed by computing and combining the stress failure rates of all the electronic components in the

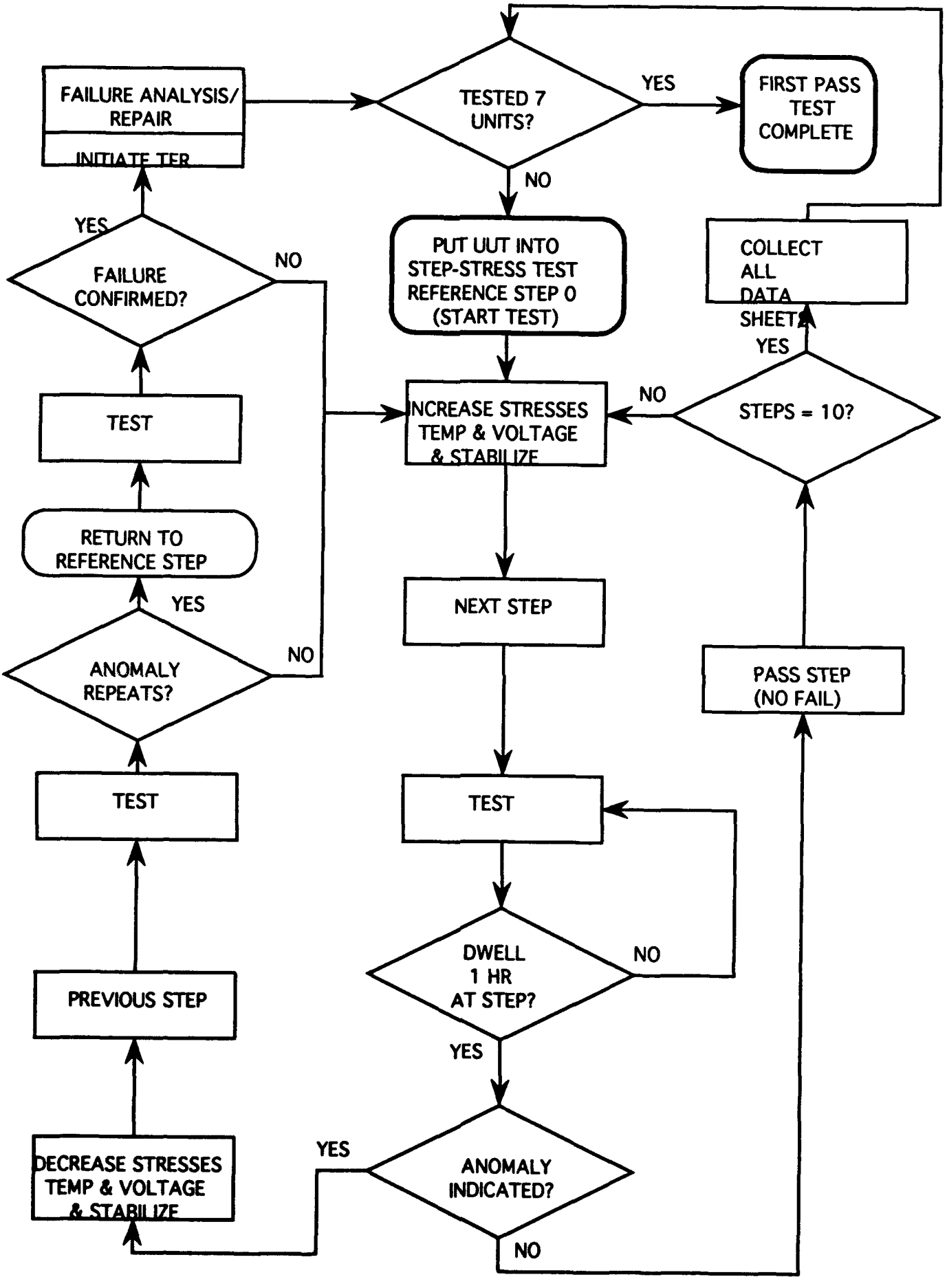

Figure 2.1-1 Step-Stress Test Flow Diagram

test unit. The stress failure rates were determined through the use of MIL-HDBK-217 and the results of thermal analyses (provided in Appendix B) and SPICE electrical analyses. The thermal and electrical stresses (in the form of case temperature, voltage, current, and power) were combined with the physical characteristics (e.g. number of pins, technology) and manufacturing features (e.g., quality level of screening program) of each component and entered into the applicable MIL-HDBK-217 failure rate equation. The equations were executed using a spreadsheet for each applied voltage, temperature, and environmental condition under study.

3.1.1 Prediction Ground Rules and Assumption. The following ground rules were used in calculating component failure rates:

1) The physical characteristics and manufacturing features of each component were determined through the use of the part list included on the test article drawings and MIL-HDBK-217 tables.

2) Electrical stress ratios were computed as the ratio of the applied stress (as determined by the electrical circuit analyses) to the maximum rating according to the component specification (commercial or military as appropriate). Stress ratios of less than 1% were rounded up to 1%.

3) Discrete R.F. filter failure rates were derived by the part count prediction method (Section 5.2 of MIL-HDBK-217) because there was insufficient data available to perform stress based failure rate predictions.

4) Inductive device (R.F. coils and transformers) failure rates were extrapolated proportionately to wirewound resistor R3 in the Detector module beyond Step 0. This was done because the MIL-HDBK-217 inductive device failure rate equations were not applicable to the range of test temperatures.

5) The quality factors for internal hybrid components were equated to the discrete components used in the test article.

6) The electrical stress ratios for internal hybrid components were assumed to be 30% (as supplier stress analysis was not available).

7) Measured thermocouple data was utilized to the maximum extent possible.

8) The temperatures of the internal hybrid components were assumed to be 10 degrees Centigrade above the hybrid case temperatures.

9) Discrete components were assumed to have case temperatures equal to the compartment temperatures.

10) Thermocouple data was extrapolated for steps 9 and 10 based on temperature differentials above the chamber temperature at step 8.

11) The VCO hybrid case temperature was assumed to be 20 degrees Centigrade above the environmental chamber temparature, and all other hybrids 10 degrees above, based on the thermocouple data.

3.1.2 Failure Rate Prediction Results. Predictions were established for each applied temperature and voltage condition under study. Predicted component failure rate summaries are provided in Appendix A, showing the total (for the entire part quantity) failure rates for each part at each condition. The predicted test article reliability summary (Table 3.1.2-1) shows predicted failure rates and Mean Times Between Failures (MTBF) at each stress condition.

Predictions are provided for the following conditions:

- 25 degrees Centigrade, Ground Benign (Gb) environment.

- 25 degrees Centigrade, Ground Fixed (Gf) environment.

- 25 degrees Centigrade, Airborne Inhabited Cargo (Aic) environment.

- Steps 1 through 10, the temperature and voltage conditions defined in the main body of this test report, in a Ground Benign (Gb) environment.

TABLE 3.2.1-1 - PREDICTED TEST ARTICLE RELIABILITY SUMMARY

Condition	Failure Rate (per mil. hrs.)	MTBF (Hours)
25C, Gb	8.68	115262
25C, Gf	32.07	31180
25C, Aic	48.16	20763
Step 0	22.04	45373
Step 1	24.80	40325
Step 2	28.39	35225
Step 3	32.07	31177
Step 4	39.96	25024
Step 5	48.48	20628
Step 6	56.01	17854
Step 7	67.82	14746
Step 8	84.93	11774
Step 9	113.59	8804
Step 10	144.63	6914

3.2 Field Estimates. Field failure experience for July of 1985 through July of 1989 was reviewed and it was determined that there had been four (4) failures of the test article. Field operating experience for July of 1985 through June of 1988 was obtained, which was then extrapolated through July of 1989. The equipment operating hours and failure data experience were then used to determine the observed MTBF in each field environment as summarized below:

	Airborne Environment	Ground Environment
Operating Hours	13,200	86,800
Failures	2 (a,b)	2 (b,c)
Observed MTBF	6600	43,400

Failure description:

a) Replaced R40 and U3 in the detector.
b) Failed fault isolation test, no repair data.
c) Fractured solder joints.

APPENDIX A

Reliability Predictions

APPENDIX A

Reliability Abbreviations

Gf - Ground Fixed Environment

Aic - Airborne Inhabited Cargo Environment

Step - Temperature and voltage conditions as defined in main body of test plan

REF DES - Reference Designator (Circuit Symbol)

PREDICTED COMPONENT FAILURE RATE SUMMARY (Per Million Hours)

SYNTHESIZER INTEGRATED CIRCUITS

QTY PARTS	REF DES	NAME	P/N	TOTAL FAIL.RATE 25C, Gb	TOTAL FAIL.RATE 25C, Gf	TOTAL FAIL.RATE 25C, Aic	TOTAL FAIL.RATE Step 0	TOTAL FAIL.RATE Step 1	TOTAL FAIL.RATE Step 2	TOTAL FAIL.RATE Step 3	TOTAL FAIL.RATE Step 4	TOTAL FAIL.RATE Step 5	TOTAL FAIL.RATE Step 6	TOTAL FAIL.RATE Step7	TOTAL FAIL.RATE Step 8	TOTAL FAIL.RATE Step 9	TOTAL FAIL.RATE Step 10
2	U6-7	DIGITAL IC	M38510-00903BCB	0.0108018	0.031325	0.031325	0.033335	0.043558	0.056422	0.072806	0.094302	0.119744	0.137284	0.159464	0.195317	0.254594	0.308560
1	U8	DIGITAL IC	M38510-01004BEB	0.0059715	0.018526	0.018526	0.017615	0.022878	0.029492	0.037903	0.048926	0.061956	0.070931	0.082274	0.100593	0.130851	0.158371
1	U4	DIGITAL IC	M38510-06006BEB	0.0044593	0.017013	0.017013	0.012333	0.016052	0.020806	0.026951	0.035128	0.044933	0.051757	0.060448	0.074621	0.098319	0.120123
2	U9-10	DIGITAL IC	M38510-31401BEB	0.0118590	0.036968	0.036968	0.050717	0.073329	0.103003	0.145489	0.203820	0.279958	0.312572	0.391894	0.518188	0.729414	0.934242
3	U1-3	DIGITAL IC	725000-539	0.0349651	0.110292	0.110292	0.102790	0.136020	0.175896	0.229418	0.299408	0.384099	0.392535	0.480859	0.586921	0.764384	0.925963
1	U5	DIGITAL IC	725000-540	0.0090235	0.034132	0.034132	0.025050	0.032606	0.042257	0.054721	0.071295	0.091156	0.104972	0.122564	0.151237	0.199155	0.243218
1	U12	LINEAR IC	M38510-10107BGA	0.0110510	0.015206	0.015206	0.100219	0.160127	0.249510	0.383532	0.590101	0.875173	1.095242	1.399149	1.946956	2.993350	4.085527
1	U11	HYBRID, VCO	728000-174	0.0179662	0.118198	0.203014	0.365173	0.489903	0.652992	0.863948	1.172060	1.523654	2.025161	2.586756	3.278828	4.129784	5.186581
		TOTAL CONNECTIONS		0.006724	0.015465	0.01681	0.006724	0.006724	0.006724	0.006724	0.006724	0.006724	0.006724	0.006724	0.006724	0.006724	0.006724

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SYNTHESIZER DISCRETE COMPONENTS

QTY PARTS	REF DES	NAME	PART NO.	TOTAL FAIL.RATE 25C, Gf	TOTAL FAIL.RATE 25C, Gf	TOTAL FAIL.RATE 25C, Aic	TOTAL FAIL.RATE Step 0	TOTAL FAIL.RATE Step 1	TOTAL FAIL.RATE Step 2	TOTAL FAIL.RATE Step 3	TOTAL FAIL.RATE Step 4	TOTAL FAIL.RATE Step 5	TOTAL FAIL.RATE Step 6	TOTAL FAIL.RATE Step7	TOTAL FAIL.RATE Step 8	TOTAL FAIL.RATE Step 9	TOTAL FAIL.RATE Step 10
1	Q9	NPN TRANSISTOR	JANTX2N2222A	0.0000362	0.000210	0.000344	0.000052	0.000057	0.000063	0.000071	0.000080	0.000090	0.000099	0.000108	0.000123	0.000157	0.000188
4	Q5-8	NPN TRANSISTOR	JANTX2N2369A	0.0001359	0.000788	0.001291	0.000201	0.000221	0.000242	0.000267	0.000297	0.000325	0.000347	0.000389	0.000438	0.000529	0.000621
4	Q1-4	PNP TRANSISTOR	JANTX2N2907A	0.0002116	0.001227	0.002011	0.000331	0.000366	0.000406	0.000461	0.000520	0.000589	0.000639	0.000704	0.000819	0.001045	0.001367
3	CR6-8	DIODE	JANTX1N4153-1	0.0000680	0.000265	0.001020	0.000136	0.000158	0.000188	0.000218	0.000255	0.000296	0.000324	0.000361	0.000423	0.000540	0.000672
4	CR1-4	DIODE	JANTX1N5711	0.0001136	0.000443	0.001704	0.000219	0.000261	0.000301	0.000359	0.000421	0.000494	0.000565	0.000640	0.000777	0.001123	0.001530
1	CR5	ZENER DIODE	JANTX1N5523B	0.0003107	0.001211	0.001398	0.000415	0.000443	0.000474	0.000508	0.000550	0.000598	0.000630	0.000672	0.000743	0.000876	0.001018
1	R6	RESISTOR,FIXED	RLR05C1001GM	0.0006804	0.001633	0.001701	0.000906	0.000979	0.001060	0.001154	0.001267	0.001390	0.001471	0.001571	0.001725	0.001972	0.002191
10	R7-16	RESISTOR,FIXED	RLR05C1002GM	0.0068041	0.016330	0.017010	0.009065	0.009920	0.010749	0.011704	0.012849	0.014107	0.014932	0.015941	0.017778	0.020333	0.022606
1	R52,(46)	RESISTOR,FIXED	RLR05C1002GM	0.0006804	0.001633	0.001701	0.000906	0.000979	0.001060	0.001154	0.001267	0.001390	0.001471	0.001571	0.001725	0.001972	0.002191
1	R53	RESISTOR,FIXED	RLR05C1102GM	0.0006804	0.001633	0.001701	0.000906	0.000979	0.001060	0.001154	0.001267	0.001390	0.001471	0.001571	0.001725	0.001972	0.002191
1	R2,(60)	RESISTOR,FIXED	RLR05C1501GM	0.0007970	0.001912	0.001992	0.001081	0.001173	0.001293	0.001434	0.001582	0.001770	0.001906	0.002042	0.002288	0.002675	0.002990

QTY PARTS	REF DES	NAME	PART NO.	TOTAL FAIL.RATE 25C, Gf	TOTAL FAIL.RATE 25C, Gf	TOTAL FAIL.RATE 25C, Aic	TOTAL FAIL.RATE Step 0	TOTAL FAIL.RATE Step 1	TOTAL FAIL.RATE Step 2	TOTAL FAIL.RATE Step 3	TOTAL FAIL.RATE Step 4	TOTAL FAIL.RATE Step 5	TOTAL FAIL.RATE Step 6	TOTAL FAIL.RATE Step7	TOTAL FAIL.RATE Step 8	TOTAL FAIL.RATE Step 9	TOTAL FAIL.RATE Step 10
1	R21,(45)	RESISTOR,FIXED	RLR05C1801GM	0.0007447	0.001787	0.001861	0.001002	0.001085	0.001195	0.001322	0.001476	0.001648	0.001774	0.001926	0.002156	0.002517	0.002854
1	R60,(59)	RESISTOR,FIXED	RLR05C1801GM	0.0006804	0.001633	0.001701	0.000906	0.000979	0.001060	0.001154	0.001267	0.001390	0.001471	0.001571	0.001725	0.001972	0.002191
0	(R52)	RESISTOR,FIXED	RLR05C1802GM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	R23	RESISTOR,FIXED	RLR05C2000GM	0.0007447	0.001787	0.001861	0.001002	0.001100	0.001195	0.001322	0.001476	0.001648	0.001774	0.001926	0.002156	0.002517	0.002898
0	(R43,58)	RESISTOR,FIXED	RLR05C2001GM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	R59	RESISTOR,FIXED	RLR05C2201GM	0.0006804	0.001633	0.001701	0.000906	0.000979	0.001060	0.001154	0.001267	0.001390	0.001471	0.001571	0.001725	0.001972	0.002191
1	R58,(57)	RESISTOR,FIXED	RLR05C2401GM	0.0006804	0.001633	0.001701	0.000906	0.000979	0.001060	0.001154	0.001267	0.001390	0.001471	0.001571	0.001725	0.001972	0.002191
0	(R53)	RESISTOR,FIXED	RLR05C2402GM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	R48,(43)	RESISTOR,FIXED	RLR05C2701GM	0.0020907	0.005017	0.005226	0.002928	0.003242	0.003650	0.004079	0.005072	0.005342	0.005784	0.006417	0.007364	0.008851	0.010303
2	R56-57	RESISTOR,FIXED	RLR05C2701GM	0.0006804	0.001633	0.001701	0.000906	0.000979	0.001060	0.001154	0.001267	0.001390	0.001471	0.001571	0.001725	0.001972	0.002191
0	(R56)	RESISTOR,FIXED	RLR05C3001GM	0.0006804	0.001633	0.001701	0.000906	0.000979	0.001060	0.001154	0.001267	0.001390	0.001471	0.001571	0.001725	0.001972	0.002191
1	R55	RESISTOR,FIXED	RLR05C3301GM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	R47	RESISTOR,FIXED	RLR05C3302GM	0.0006804	0.001633	0.001701	0.000906	0.000979	0.001060	0.001154	0.001267	0.001390	0.001471	0.001571	0.001725	0.001972	0.002191
1	R54	RESISTOR,FIXED	RLR05C3601GM	0.0006804	0.001633	0.001701	0.000906	0.000979	0.001060	0.001154	0.001267	0.001390	0.001471	0.001571	0.001725	0.001972	0.002191
8	R24-31	RESISTOR,FIXED	RLR05C3900GM	0.0058914	0.014139	0.014728	0.007921	0.008687	0.009560	0.010577	0.011810	0.013191	0.014194	0.015413	0.017253	0.020138	0.022833
2	R42,45	RESISTOR,FIXED	RLR05C3901GM	0.0020907	0.005017	0.005226	0.002928	0.003285	0.003699	0.004191	0.004798	0.005496	0.006038	0.006704	0.007700	0.009265	0.010795
1	R50	RESISTOR,FIXED	RLR05C47R0GM	0.0006804	0.001633	0.001701	0.000906	0.000979	0.001060	0.001154	0.001267	0.001390	0.001471	0.001571	0.001725	0.001972	0.002191
2	R4-5	RESISTOR,FIXED	RLR05C4700GM	0.0018673	0.004481	0.004668	0.002549	0.002849	0.003240	0.003660	0.004235	0.004906	0.005461	0.006143	0.007149	0.008851	0.010465
2	R22,40	RESISTOR,FIXED	RLR05C4700GM	0.0018673	0.004481	0.004668	0.002517	0.002849	0.003198	0.003660	0.004235	0.002781	0.002943	0.006143	0.007149	0.008717	0.010465
4	R17-20	RESISTOR,FIXED	RLR05C5101GM	0.0027838	0.006681	0.006959	0.003626	0.003917	0.004243	0.004618	0.005069	0.005563	0.005887	0.006284	0.006903	0.007889	0.008765
2	R46,54	RESISTOR,FIXED	RLR05C5601GM	0.0013608	0.003266	0.003402	0.001813	0.001958	0.002121	0.002309	0.002534	0.002781	0.002943	0.003142	0.003451	0.003944	0.004382
1	R49	RESISTOR,FIXED	RLR05C6200GM	0.0009025	0.002166	0.002256	0.001211	0.001335	0.001476	0.001642	0.001843	0.002069	0.002232	0.002432	0.002735	0.003212	0.003659
0	(R54)	RESISTOR,FIXED	RLR05C6201GM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8	R32-39	RESISTOR,FIXED	RLR05C7501GM	0.0055677	0.013362	0.013919	0.007252	0.007834	0.008486	0.009237	0.010138	0.011126	0.011775	0.012568	0.013806	0.015778	0.017531
1	R51	RESISTOR,FIXED	RLR05C9101GM	0.0006804	0.001633	0.001701	0.000906	0.000979	0.001060	0.001154	0.001267	0.001390	0.001471	0.001571	0.001725	0.001972	0.002191
1	R1	RESISTOR,FIXED	RLR07C1201GM	0.0014672	0.003521	0.003668	0.002138	0.002452	0.002788	0.003233	0.003792	0.004451	0.004992	0.005665	0.006772	0.008396	0.010051
1	R41	RESISTOR,FIXED	RLR07C2201GM	0.0007118	0.001708	0.001779	0.000941	0.001031	0.001118	0.001235	0.001358	0.001493	0.001604	0.001714	0.001914	0.002194	0.002481
0	(R3)	RESISTOR,FIXED	RLR07C4700GM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	R3	RESISTOR,FIXED	RLR07C6800GM	0.0012957	0.003109	0.003239	0.001861	0.002183	0.002575	0.003062	0.003740	0.004515	0.005288	0.006273	0.007741	0.010082	0.012888
0	(R51)	RESISTOR,FIXED	RNC55H1402FM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	R44	RESISTOR,VAR	713177-1	0.2230141	0.646741	0.669042	0.269433	0.287893	0.310641	0.339575	0.375178	0.426171	0.460806	0.506854	0.587379	0.740043	0.914403
1	C28	CAPACITOR,FIXED	M39014-01-1219	0.0004432	0.000709	0.001329	0.000485	0.000496	0.000506	0.000517	0.000529	0.000540	0.000547	0.000555	0.000566	0.000581	0.001185
8	C1-8	CAPACITOR,FIXED	M39014-01-1237	0.0046535	0.007445	0.013960	0.005094	0.005204	0.005315	0.005429	0.005552	0.005672	0.005744	0.005871	0.005987	0.006149	0.006274
2	C26-27	CAPACITOR,FIXED	M39014-01-1455	0.0014776	0.002364	0.004432	0.001617	0.001652	0.001687	0.001729	0.001769	0.001807	0.001830	0.001856	0.001901	0.001952	0.001992
6	C15-20	CAPACITOR,FIXED	M39014-01-1473	0.0113689	0.018190	0.034106	0.012445	0.013370	0.013656	0.014682	0.015014	0.016151	0.017230	0.017475	0.018780	0.019287	0.020744

QTY PARTS	REF DES	NAME	PART NO.	TOTAL FAIL.RATE 25C, Gf	TOTAL FAIL.RATE 25C, Gf	TOTAL FAIL.RATE 25C, Alc	TOTAL FAIL.RATE Step 0	TOTAL FAIL.RATE Step 1	TOTAL FAIL.RATE Step 2	TOTAL FAIL.RATE Step 3	TOTAL FAIL.RATE Step 4	TOTAL FAIL.RATE Step 5	TOTAL FAIL.RATE Step 6	TOTAL FAIL.RATE Step7	TOTAL FAIL.RATE Step 8	TOTAL FAIL.RATE Step 9	TOTAL FAIL.RATE Step 10
1	C25	CAPACITOR,FIXED	M39003-01-2254	0.0017338	0.004161	0.004334	0.000917	0.001091	0.001344	0.001733	0.002389	0.003453	0.004429	0.006043	0.009921	0.022230	0.046043
1	C23	CAPACITOR,FIXED	M39003-01-2258	0.0021907	0.005257	0.005476	0.003423	0.004410	0.005878	0.008199	0.012222	0.019089	0.026438	0.038913	0.068816	0.166082	0.369952
1	C9	CAPACITOR,FIXED	M39003-01-2304	0.0013761	0.003302	0.003440	0.000959	0.001141	0.001405	0.001811	0.002497	0.003609	0.004630	0.006317	0.010366	0.023238	0.048130
1	C24	CAPACITOR,FIXED	M39003-01-2312	0.0017355	0.004165	0.004338	0.001209	0.001439	0.001772	0.002285	0.003149	0.004552	0.005839	0.007967	0.013073	0.029305	0.060697
1	C14	CAPACITOR,FIXED	CHR04C1R0DDM	0.0000956	0.000229	0.000334	0.000406	0.000572	0.000806	0.001111	0.001622	0.002283	0.002808	0.003517	0.004813	0.007370	0.010166
2	C12-13	CAPACITOR,FIXED	CHR04E510JDM	0.0003266	0.000784	0.001143	0.001388	0.001954	0.002739	0.003855	0.005514	0.007760	0.009488	0.011883	0.016260	0.024899	0.034345
1	C22	CAPACITOR,FIXED	CHR04E620JDM	0.0001678	0.000402	0.000587	0.000713	0.001004	0.001407	0.001981	0.002833	0.003987	0.004875	0.006106	0.008355	0.012802	0.017658
1	C11,(12)	CAPACITOR,FIXED	CHR04F101JDM	0.0001794	0.000430	0.000627	0.000762	0.001073	0.001504	0.002117	0.003028	0.004262	0.005210	0.006526	0.008930	0.013675	0.018862
1	C10	CAPACITOR,FIXED	CHR04F221JDM	0.0002004	0.000481	0.000701	0.000852	0.001199	0.001680	0.002365	0.003383	0.004761	0.005821	0.007291	0.009976	0.015286	0.021084
1	C21	CAPACITOR,FIXED	CHR04F331JDAM	0.0002127	0.000510	0.000744	0.000904	0.001272	0.001784	0.002516	0.003598	0.005064	0.006191	0.007755	0.010639	0.016292	0.022472
1	T1	TRANSFORMER	712944-1	0.0688186	0.392266	0.309683	0.370777	0.396133	0.422538	0.452415	0.485568	0.521080	0.544929	0.583586	0.626436	0.691235	0.745813
1	L5	COIL,RF	MS75089-14	0.0004437	0.001597	0.001775	0.000794	0.000848	0.000904	0.000968	0.001039	0.001116	0.001167	0.001249	0.001341	0.001480	0.001597
4	L1-4	COIL,RF	712088-1	0.0355009	0.127803	0.142003	0.063529	0.067873	0.072398	0.077517	0.083197	0.089282	0.093368	0.099992	0.107334	0.118436	0.127788
1	J1	CONNECTOR	720809-1	0.0016064	0.005033	0.010709	0.003784	0.004581	0.005520	0.006654	0.008082	0.009727	0.010848	0.012261	0.014554	0.018414	0.022047
		TOTAL CONNECTIONS		0.010373	0.023857	0.025932	0.010373	0.010373	0.010373	0.010373	0.010373	0.010373	0.010373	0.010373	0.010373	0.010373	0.010373

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DETECTOR INTEGRATED CIRCUITS

QTY PARTS	REF DES	NAME	P/N	JOTAL FAIL.RATE 25C, Gf	TOTAL FAIL.RATE 25C, Gf	TOTAL FAIL.RATE 25C, Alc	TOTAL FAIL.RATE Step 0	TOTAL FAIL.RATE Step 1	TOTAL FAIL.RATE Step 2	TOTAL FAIL.RATE Step 3	TOTAL FAIL.RATE Step 4	TOTAL FAIL.RATE Step 5	TOTAL FAIL.RATE Step 6	TOTAL FAIL.RATE Step7	TOTAL FAIL.RATE Step 8	TOTAL FAIL.RATE Step 9	TOTAL FAIL.RATE Step 10
4	AR1-4	LINEAR IC	725000-846	0.0770147	0.129079	0.129079	0.687369	1.079768	1.675256	2.502761	3.754228	5.438978	6.941437	9.700145	13.45306	20.82801	28.56865
1	U15	LINEAR IC	725000-958	0.0142422	0.033019	0.033019	0.121910	0.196740	0.305270	0.473245	0.724573	1.080086	1.373508	1.952523	2.752249	4.302080	5.941335
4	U11-14	LINEAR IC	725004-42	0.0768435	0.158939	0.158939	0.647295	1.021975	1.594786	1.473459	3.796147	5.624473	6.698592	8.927262	13.28882	20.58336	28.24331
2	U3-4	HYBRID	728000-47	0.0280889	0.184795	0.329029	0.491197	0.661715	0.888317	1.059733	1.626489	2.135742	2.871034	3.701508	4.731379	5.998033	7.541130
2	U7-8	HYBRID	728000-48	0.0132359	0.087078	0.154113	0.092097	0.120196	0.157406	0.206172	0.278279	0.361597	0.481508	0.617276	0.785730	0.993396	1.246374
2	U5-6	HYBRID	728000-112	0.0132359	0.087078	0.154113	0.092097	0.120196	0.157406	0.206172	0.278279	0.361597	0.481508	0.617276	0.785730	0.993396	1.246374
2	FL3-4	HYBRID	730000-8	4.2	16.4	32	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2
		TOTAL CONNECTIONS		0.004428	0.010184	0.01107	0.004428	0.004428	0.004428	0.004428	0.004428	0.004428	0.004428	0.004428	0.004428	0.004428	0.004428

DETECTOR DISCRETE COMPONENTS

QTY PARTS	REF DES	NAME	PART NO.	TOTAL FAIL.RATE 25C, Gf	TOTAL FAIL.RATE 25C, Gf	TOTAL FAIL.RATE 25C, Alc	TOTAL FAIL.RATE Step 0	TOTAL FAIL.RATE Step 1	TOTAL FAIL.RATE Step 2	TOTAL FAIL.RATE Step 3	TOTAL FAIL.RATE Step 4	TOTAL FAIL.RATE Step 5	TOTAL FAIL.RATE Step 6	TOTAL FAIL.RATE Step7	TOTAL FAIL.RATE Step 8	TOTAL FAIL.RATE Step 9	TOTAL FAIL.RATE Step 10
1	VR1	ZENER DIODE	JANTX1N751A-1	0.0003038	0.001184	0.001367	0.000406	0.000434	0.000462	0.000494	0.000532	0.000574	0.000604	0.000657	0.000724	0.000848	0.000980
1	R61	RESISTOR,FIXED	RCR05G2R7JS	0.0000061	0.000017	0.000018	0.000021	0.000028	0.000038	0.000051	0.000068	0.000091	0.000109	0.000143	0.000188	0.000273	0.000362
4	R23-26	RESISTOR,FIXED	RLR05C1001GN	0.0026722	0.006413	0.006680	0.003544	0.003820	0.004117	0.004467	0.004869	0.005316	0.005626	0.006145	0.006744	0.007698	0.008545
4	R53-56	RESISTOR,FIXED	RLR05C1001GN	0.0029557	0.007093	0.007389	0.003967	0.004288	0.004695	0.005178	0.005741	0.006380	0.006865	0.007639	0.008545	0.009965	0.011290
2	R41,52	RESISTOR,FIXED	RLR05C1002GN	0.0013361	0.003206	0.003340	0.001772	0.001910	0.002058	0.002233	0.002434	0.002658	0.002813	0.003072	0.003372	0.003849	0.004272
4	R57-60	RESISTOR,FIXED	RLR05C1002GN	0.0026722	0.006413	0.006680	0.003544	0.003820	0.004117	0.004467	0.004869	0.005316	0.005626	0.006145	0.006744	0.007698	0.008545
2	R62-63	RESISTOR,FIXED	RLR05C1002GN	0.0013361	0.003206	0.003340	0.001772	0.001910	0.002058	0.002233	0.002434	0.002658	0.002813	0.003072	0.003372	0.003849	0.004272
2	R64,67	RESISTOR,FIXED	RLR05C11R0GN	0.0013361	0.003206	0.003340	0.001772	0.001910	0.002058	0.002233	0.002434	0.002658	0.002813	0.003072	0.003372	0.003849	0.004272
4	R11-14	RESISTOR,FIXED	RLR05C1201GN	0.0026722	0.006413	0.006680	0.003544	0.003820	0.004117	0.004467	0.004869	0.005316	0.005626	0.006145	0.006744	0.007698	0.008545
4	R19-22	RESISTOR,FIXED	RLR05C1201GN	0.0026722	0.006413	0.006680	0.003544	0.003820	0.004117	0.004467	0.004869	0.005316	0.005626	0.006145	0.006744	0.007698	0.008545
1	R31	RESISTOR,FIXED	RLR05C2201GN	0.0006680	0.001603	0.001670	0.000886	0.000955	0.001029	0.001116	0.001217	0.001329	0.001406	0.001536	0.001686	0.001924	0.002136
2	R33-34	RESISTOR,FIXED	RLR05C2201GN	0.0013361	0.003206	0.003340	0.001772	0.001910	0.002058	0.002233	0.002434	0.002658	0.002813	0.003072	0.003372	0.003849	0.004272
2	R36-37	RESISTOR,FIXED	RLR05C2201GN	0.0013361	0.003206	0.003340	0.001772	0.001910	0.002058	0.002233	0.002434	0.002658	0.002813	0.003072	0.003372	0.003849	0.004272
2	R39,42	RESISTOR,FIXED	RLR05C2201GN	0.0013361	0.003206	0.003340	0.001772	0.001910	0.002058	0.002233	0.002434	0.002658	0.002813	0.003072	0.003372	0.003849	0.004272
2	R44-45	RESISTOR,FIXED	RLR05C2201GN	0.0013361	0.003206	0.003340	0.001772	0.001910	0.002058	0.002233	0.002434	0.002658	0.002813	0.003072	0.003372	0.003849	0.004272
2	R47-48	RESISTOR,FIXED	RLR05C2201GN	0.0013361	0.003206	0.003340	0.001772	0.001910	0.002058	0.002233	0.002434	0.002658	0.002813	0.003072	0.003372	0.003849	0.004272
1	R50	RESISTOR,FIXED	RLR05C2201GN	0.0006680	0.001603	0.001670	0.000886	0.000955	0.001029	0.001116	0.001217	0.001329	0.001406	0.001536	0.001686	0.001924	0.002136
2	R5-6	RESISTOR,FIXED	RLR05C3901GN	0.0014778	0.003546	0.003694	0.001983	0.002144	0.002317	0.002520	0.002754	0.003016	0.003197	0.003552	0.003909	0.004480	0.004988
2	R65-66	RESISTOR,FIXED	RLR05C4300GN	0.0013361	0.003206	0.003340	0.001772	0.001910	0.002058	0.002233	0.002434	0.002658	0.002813	0.003072	0.003372	0.003849	0.004272
2	R68-69	RESISTOR,FIXED	RLR05C4300GN	0.0013361	0.003206	0.003340	0.001772	0.001910	0.002058	0.002233	0.002434	0.002658	0.002813	0.003072	0.003372	0.003849	0.004272
4	R15-18	RESISTOR,FIXED	RLR05C4701GN	0.0026722	0.006413	0.006680	0.003544	0.003820	0.004117	0.004467	0.004869	0.005316	0.005626	0.006145	0.006744	0.007698	0.008545
4	R7-10	RESISTOR,FIXED	RLR05C56R0GN	0.0026722	0.006413	0.006680	0.003544	0.003820	0.004117	0.004467	0.004869	0.005316	0.005626	0.006145	0.006744	0.007698	0.008545
1	R4	RESISTOR,FIXED	RNR80S93R1FN	0.0085035	0.012755	0.012755	0.011999	0.013397	0.014937	0.017209	0.019386	0.021852	0.024516	0.027614	0.032156	0.037760	0.043068
1	R3	RESISTOR,FIXED	RNR81S45R3FN	0.0058095	0.008714	0.008714	0.007838	0.008885	0.009815	0.010901	0.012491	0.013945	0.015551	0.017360	0.020031	0.023231	0.027075
2	R1-2	RESISTOR,FIXED	RNR81S68R1FN	0.0194547	0.029182	0.029182	0.027890	0.033756	0.042026	0.052894	0.067167	0.088171	0.111881	0.148097	0.197927	0.287205	0.404716
2	R32,38	RESISTOR,VAR	713177-2	0.4397736	1.275343	1.319320	0.525670	0.559321	0.598937	0.650048	0.715268	0.796243	0.857717	0.971482	1.120463	1.401469	1.702273
2	R40,43	RESISTOR,VAR	713177-2	0.4397736	1.275343	1.319320	0.525670	0.559321	0.598937	0.650048	0.715268	0.796243	0.857717	0.971482	1.120463	1.401469	1.702273
2	R49,51	RESISTOR,VAR	713177-2	0.4397736	1.275343	1.319320	0.525670	0.559321	0.598937	0.650048	0.715268	0.796243	0.857717	0.971482	1.120463	1.401469	1.702273
4	R27-30	RESISTOR,VAR	713177-3	0.8795472	2.550686	2.638641	1.051341	1.118642	1.197875	1.300097	1.430537	1.592486	1.715434	1.942964	2.240926	2.802938	3.404546
4	C19-22	CAPACITOR,FIXED	M39014-01-1464	0.0033328	0.005332	0.009998	0.003648	0.003726	0.003801	0.003881	0.003964	0.004047	0.004251	0.004179	0.004262	0.004377	0.004466
10	C5-14	CAPACITOR,FIXED	M39014-01-1473	0.0188248	0.030119	0.056474	0.020606	0.022134	0.022583	0.024268	0.024786	0.026643	0.028430	0.028986	0.031152	0.031992	0.034408
5	C31-35	CAPACITOR,FIXED	M39014-01-1473	0.0048805	0.007808	0.014641	0.005217	0.005403	0.005513	0.005629	0.005749	0.005869	0.005945	0.006120	0.006181	0.006347	0.006540

QTY PARTS	REF DES	NAME	PART NO.	TOTAL FAIL.RATE 25C, Gf	TOTAL FAIL.RATE 25C, Gf	TOTAL FAIL.RATE 25C, Aic	TOTAL FAIL.RATE Step 0	TOTAL FAIL.RATE Step 1	TOTAL FAIL.RATE Step 2	TOTAL FAIL.RATE Step 3	TOTAL FAIL.RATE Step 4	TOTAL FAIL.RATE Step 5	TOTAL FAIL.RATE Step 6	TOTAL FAIL.RATE Step7	TOTAL FAIL.RATE Step 8	TOTAL FAIL.RATE Step 9	TOTAL FAIL.RATE Step 10
3	C37-39	CAPACITOR,FIXED	M39014-01-1473	0.0028238	0.004518	0.008471	0.003091	0.003157	0.003221	0.003289	0.003359	0.003429	0.003473	0.003541	0.003611	0.003708	0.003784
2	C41-42	CAPACITOR,FIXED	M39014-01-1473	0.0018825	0.003012	0.005647	0.002060	0.002104	0.002147	0.002192	0.002239	0.002286	0.002315	0.002360	0.002407	0.002472	0.002522
1	C51	CAPACITOR,FIXED	M39014-01-1473	0.0018824	0.003011	0.005647	0.002060	0.002213	0.002258	0.002426	0.002478	0.002664	0.002843	0.002898	0.003115	0.003199	0.003440
8	C25-30	CAPACITOR,FIXED	M39014-02-1407	0.0100597	0.016095	0.030179	0.011012	0.011246	0.011475	0.011717	0.011967	0.012216	0.012373	0.012615	0.012865	0.013212	0.013639
8	C43-50	CAPACITOR,FIXED	M39014-02-1407	0.0100597	0.016095	0.030179	0.011012	0.011246	0.011610	0.011855	0.012278	0.012533	0.012695	0.013154	0.013415	0.014035	0.014320
4	C15-18	CAPACITOR,FIXED	CHR04F151FODL	0.0010262	0.002462	0.003591	0.004362	0.006115	0.008435	0.011776	0.016507	0.022952	0.028176	0.038398	0.052540	0.080456	0.110977
1	C52	CAPACITOR,FIXED	M39003-01-2253	0.0016631	0.003991	0.004157	0.002528	0.002972	0.003579	0.004510	0.005971	0.008281	0.010883	0.016277	0.027283	0.061789	0.129733
2	C3-4	CAPACITOR,FIXED	M39003-01-2255	0.0034015	0.008163	0.008503	0.005172	0.006582	0.008578	0.011694	0.016743	0.025092	0.034223	0.055214	0.095862	0.224660	0.487636
2	C1-2	CAPACITOR,FIXED	M39003-01-2569	0.0016378	0.003930	0.004094	0.002490	0.003017	0.003632	0.004722	0.006253	0.008956	0.011693	0.017488	0.029147	0.063447	0.132579
12	L1-12	COIL,RF	712088-1	0.1046619	0.376711	0.418567	0.176916	0.189015	0.201614	0.215869	0.231688	0.248633	0.260013	0.278458	0.298904	0.329823	0.355865
1	J2	CONNECTOR	720809-1	0.0015038	0.004712	0.010025	0.003567	0.004313	0.005154	0.006189	0.007439	0.008895	0.009941	0.011762	0.013957	0.017650	0.021119
2	J6,10	CONNECTOR	720360-1	0.0085704	0.026854	0.057136	0.017380	0.020521	0.024078	0.028488	0.033876	0.040257	0.044907	0.053135	0.063283	0.080878	0.097972
1	HY1	POWER DIVIDER	712466-2	0.0535579	0.352354	0.304267	0.770644	0.834794	0.905639	0.989210	1.091101	1.203392	1.311322	1.456636	1.626984	1.860776	2.097703
2	FL1-2	FILTER,RF	713772-1	0.044	0.092	0.24	0.044	0.044	0.044	0.044	0.044	0.044	0.044	0.044	0.044	0.044	0.044
2	U1-2	MIXER,RF	723112-10	0.1070354	0.704180	0.609496	1.540166	1.668038	1.809152	1.975521	2.178125	2.401308	2.615107	2.903446	3.241646	3.707694	4.186320
2	U9-10	PHASE DETECTOR	723145-2	0.4726510	3.109546	2.545120	7.202460	7.835707	8.544558	9.388111	10.43580	11.59590	12.77148	14.31409	16.13600	18.60118	21.17095
		TOTAL CONNECTIONS		0.011849	0.027252	0.029622	0.011849	0.011849	0.011849	0.011849	0.011849	0.011849	0.011849	0.011849	0.011849	0.011849	0.011849

4-9

SYNTHESIZER/DETECTOR MISCELLANEOUS COMPONENTS

QTY PARTS	REF DES	NAME	PART NO.	TOTAL FAIL.RATE 25C, Gf	TOTAL FAIL.RATE 25C, Gf	TOTAL FAIL.RATE 25C, Aic	TOTAL FAIL.RATE Step 0	TOTAL FAIL.RATE Step 1	TOTAL FAIL.RATE Step 2	TOTAL FAIL.RATE Step 3	TOTAL FAIL.RATE Step 4	TOTAL FAIL.RATE Step 5	TOTAL FAIL.RATE Step 6	TOTAL FAIL.RATE Step7	TOTAL FAIL.RATE Step 8	TOTAL FAIL.RATE Step 9	TOTAL FAIL.RATE Step 10
2	J4,11	CONNECTOR	712262-102	0.0085704	0.026854	0.057136	0.017380	0.020521	0.024078	0.028488	0.033876	0.040257	0.044907	0.053135	0.063283	0.080878	0.097972
3	J7-9	CONNECTOR	712262-102	0.0128557	0.040281	0.085704	0.026071	0.030781	0.036117	0.042732	0.050814	0.060385	0.067360	0.079703	0.094924	0.121317	0.146958
2	FL1-2	FILTER,RF	733001-1	0.044	0.092	0.24	0.044	0.044	0.044	0.044	0.044	0.044	0.044	0.044	0.044	0.044	0.044
		TOTAL CONNECTIONS		0.00041	0.000943	0.001025	0.00041	0.00041	0.00041	0.00041	0.00041	0.00041	0.00041	0.00041	0.00041	0.00041	0.00041

APPENDIX B

Trial Step-Stress Test Run

HUGHES AIRCRAFT COMPANY

INTERDEPARTMENTAL CORRESPONDENCE

TO: Dept ENB
ORG: 1A-72-XX

cc: Project Distribution

DATE: 12 February 1992
REF: 92/1A72.30/001

SUBJECT: **Trial Step-Stress Test Run**
Test Data for Appendix D

FROM: S. D. Mueller
BLDG: 675 MAIL STA: Z314
EXT: 1-8360 ORG.CODE: 1A-72-30

ABSTRACT: A trial test of the Step-Stress Testing of Receiver/Transmitter Units was performed on a sample unit (*part number*-100, MSN 349) on 25 November through 27 November 1991, with additional testing on 17 December 1992. The testing was performed to resolve requirements to be included in the R & D Test & Acceptance Plan (CDRL J003-001) being provided under contract F30602-89-D-0100/0009 (Subcontract No. D000-07 submitted to IIT Research Institute, Rome NY). The information contained in this ENB consists of data generated from the trial test and used in the preparation of *Appendix D Trial Step-Stress Test Run*; an integral part of the R & D Test & Acceptance Plan.

The contents of this ENB is as follows:

The following individuals have provided contributions to this ENB and provided technical support in the trial test effort:

S. D. Mueller, B. J. Armstrong, J. R. Switzer, W. T. Clark.

Additional support with test equipment & facilities was provided by:

J. J. DeBellis, G. H. Kwan, D. E. Arter.

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B. J. Armstrong	(Environmental Engineer)	R. A. Doctor*	J. J. DeBellis*
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SECTION 1

Text of Appendix D
Trial Step – Stress Test Run
written by S. D. Mueller
with the support of B. J. Armstrong

APPENDIX D. TRIAL STEP-STRESS TEST RUN

1.1 General. This *Appendix D* is prepared to fulfill the requirements for addition details specified within the body of text comprising the R & D Test & Acceptance Plan. The information contained herein is required for performing the Step-Stress test and constitutes an integral part of the test plan.

1.2 Scope. *Appendix D* completes the specification of test requirements and test procedures needed for implementation of the Step-Stress test plan. Provided in this *Appendix* are specific values requires by the test plan and which were previously unknown when drafted. A trial Step-Stress test run was conducted using a sample unit similar to those which will undergo the formal testing. Data accumulated and observations made during the course of the trial test run serve as the basis for all determinations and limitations represented herein. The investigation conducted by trial testing focused upon the following three topics of test implementation and are elaborated upon in subsequent paragraphs of this *Appendix*:

A) The thermal chamber temperature setting for each step of the Step-Stress test required to obtain the Step-Stress levels specified for component temperature. The temperature differentials and/or tolerances characterizing the thermal chamber, UUT ambient air, and component/compartment air.

B) The contribution to component/compartment air temperature as a result of the supply voltage stress levels increasing component power dissipation and heat generated. Increased confidence of supply voltage Step-Stress levels to accelerate UUT stress and effects upon UUT performance or limitations on design.

C) The criteria and tolerances required to obtain environmental equilibrium of the UUT at each step of the Step-Stress test. The thermal ramp rate and UUT stability to achieve dwell at Step-Stress Level. The relationship between chamber/UUT ambient air and UUT chassis flange thermocouple readings.

1.3 Trial Test Sample Unit Defined. The trial test sample unit is similar in form, fit and function to the seven production (fielded) R/T modules assigned for formal Step-Stress testing per this test plan. The sample unit, identified as MSN 349, was of a *part number*-100 configuration, which has been superseded through production upgrades, retrofit and stress screening process to the current *part number*-103 configuration now fielded. The primary differences between the -100 and -103 configurations of the same

part number, and limitations on test data results within the scope of this *Appendix*, are listed below:

A) Design changes: The design and processes changes which have evolved since the initial -100 version to the currently fielded -103 unit are as follows:

All carbon composition resistors (RCR-type) used on the -100 unit were upgraded to metal film resistors (RLR-type) on the current -103 version. The RLR-type resistors improve temperature and humidity stability and have greater reliability. This should have no impact on the average temperatures measured within the UUT.

The voltage controlled oscillator (VCO) hybrid on the -100 unit's Synthesizer card represents the greatest variation between the two configurations. The -100 unit's VCO has a greater operating frequency range than the -103 version hybrid, and was initially designed to accommodate a variety of circuit applications. The -103 version VCO hybrid improves RF operation over a smaller frequency range. Specified temperature extremes and power requirements remain similar between the two part versions, however, the internal layout and assembly processes of each VCO may be different. The LC-circuit elements to the control voltage input of the VCO have also been changed to accommodate the VCO's configuration.

The -103 unit Synthesizer incorporates a part change for transistor Q9 which was overstressed under the -100 version. The -100 employed Q9 was stressed under normal operating conditions and therefore can represent a worst case condition for this test. Also, zener diode CR5 was upgraded on the -103 unit to a better-than part to improve ramp discharge. No impact is anticipated upon temperatures measured.

The -100 Detector card lacks the two decibel (2-dB) resistive pi-attenuator at each synthesized signal input. These attenuators are included in the -103 design and were required to improve RF impedance matching with the next assembly. This absence was overcome for the -100 trial test run by providing this RF attenuation externally. Heat generated by the resistive attenuators are minute.

Also noteworthy is the variations in custom hybrid packaging found upon visual inspection of either -100 or -103 units. A specific part may have one of three typical packages employing hermetic seals by soldering or welding of the cover to the header. Covers and headers may vary in mass, plating, and surface area. The lower profile packages with welded seals are more prevalent on the -103 version units since they represent the latest in packaging design. However, all packaging techniques can be utilized in the current assembly.

B) Conformal coating: The cards of the -100 are not conformally coated. The polyurethane coating applied to -103 units will impede convection of component heat to the compartment air and therefore the majority of heat transfer will be primarily conduction to the card's ground plain and chassis. Although this affects the process by which heat will be transferred, this should not pose a significant increase in compartment air temperature and should assist in a more uniform distribution of heat throughout the compartment.

C) Stress screening: The sample unit (-100) lacks the stress screening for powered and monitored thermal cycling and unpowered random vibration. The current units (-103 configuration) undergo the stress screening process intended to seek out failures in parts and workmanship and prove unit reliability. The lack of stress screening of the -100 used did not impact the trial test as defined in the Scope of this *Appendix*.

2. Trial Test Run. A trial test run utilizing the Step-Stress test plan was conducted upon a *part number*-100 sample unit, MSN 349, on 25 November through 27 November 1991, with additional testing on 17 December 1991. Each of the four days of testing were conducted by the design engineer and environmental engineer, and concentrated upon those topics listed in the Scope of paragraph 1.2 above. The objective of the trial test run was to measure parameters to aid writing of the test plan. An investigative approach was used and deviations from the test plan and test profile were required to repeat measurements, or proof concepts. This trial test run was not intended to provide data sufficient for formal validation of the Step-Stress test method or ALT approach. The following paragraphs represent the culmination of the trial test run and the specific values affecting test implementation required for this test plan. Justifications are provided for values derived from the test data, with test data provided as required to demonstrate the concept or result. All raw data including temperature printouts, plots, test data sheets, observations, photographs, drawings, data analyses and notes generated through this trial test run will be collected and filed by the design engineer in an Engineering Notebook.

2.1 Step-Stress Test Requirements. The following establishes requirements for inclusion in the Step-Stress test plan:

2.1.1 Temperature and Supply Voltage Stresses. Table D-1 provides the *calibrated* chamber setting at each Step-Stress level to achieve the required component temperature stress. The byproduct of voltage stress has been removed. In addition, the accuracy of the particular thermal chamber used (HAC ID# H-B07567) has been factored in to these established settings. Table D-1 will be used throughout the Step-

chamber identified above. A discussion of technical approach and data analysis follows.

TABLE D-1: STEP-STRESS LEVEL CHAMBER SETTINGS

STEP STRESS LEVEL	COMPONENT TEMPERATURE STRESS (°C)	CALIBRATED CHAMBER SETTING (°C)
0	+ 70	+ 61
1	+ 78	+ 69
2	+ 86	+ 77
3	+ 94	+ 85
4	+102	+ 94
5	+110	+102
6	+118	+111
7	+126	+119
8	+134	+127
9	+142	+135
10	+150	+143

As stated in the Step-Stress test plan paragraph 2.2.1, a distinction was made between the temperature a component sees versus the temperature the UUT sees. The thermal chamber is set to maintain the UUT at a constant temperature for each Step-Stress level. The air temperature within the chassis' compartments, which the components experience, will be greater than the air surrounding the UUT, i.e., the temperature to which the chamber is set. Component temperature has been established as the baseline for determination of chamber setting.

The effects of increased supply voltage stress upon the UUT were found to be a measurable contributor to the air temperature through additional component heat dissipation within the chassis' compartments. An effort was required to quantify the thermal effects due to each incremental increases in voltage stress so that a clear distinction between stress environments (temperature stress or supply voltage stress) could be drawn. In other words, the two stress environments should be maintained as independent. In determining the component stress level due solely to temperature stress, the thermal byproduct of voltage stress had to be cancelled out in determining a proper chamber setting.

Figure D-1 shows the locations and identifies the thermocouples affixed to the trial test unit. For this discussion only thermocouples TC2 (chamber's UUT ambient air), TC1 (UUT chassis flange), TC3 (A3 component's compartment air), TC4 (A4 component's

compartment air), and TC5 (A2 component's compartment air) are being addressed. Thermocouples TC3, TC4, and TC5 are suspended above the components at the center of each compartment to record the ambient air. The remaining nine thermocouples served to provide case temperature data which was used to evaluate stability criteria (paragraph 2.1.2 of this *Appendix*) and for use in reliability predictions of *Appendix* E.

The data measured during each stress level dwell are summarized in Table D-2 and Table D-3. Table D-2 covers temperature data for cases where the temperature stress was changed to various Levels, n, while leaving the voltage stress at a constant nominal value (Level 0). Table D-3 applies to those cases where both temperature and voltage stresses were changes to the same stress Levels, n/n. Raw data used in computations are in the form of computer printouts taken every 4 or 5-minutes from the thermocouple readings. The plots of the thermocouple readings every 1-minute for each day of the trial run are provided by Figure D-2 through Figure D-5.

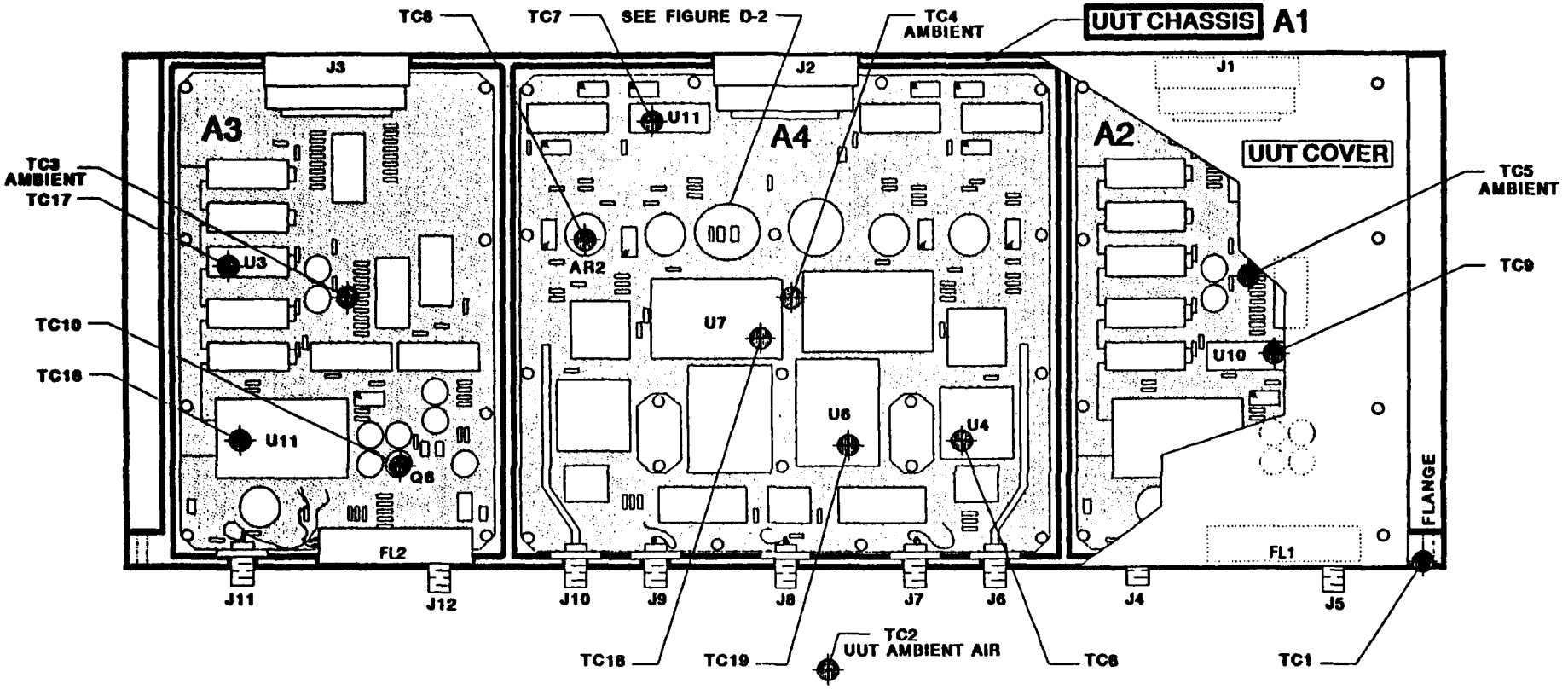
In Table D-2 and D-3, the average component's compartment air temperature, T_{cmp}, has been computed by averaging the data points of the suspended compartment thermocouples (TC3, TC4, and TC5) with the unit at dwell (environmental equilibrium). T_{cmp} is used to compute the calibrated chamber setting, T_{SET}, required to achieve a desired component stress level, T_{CSL}, for each incremental step of the Step-Stress profile. With no voltage stress applied the equation can be simplified (see Table D-2). To adjust the original trial test chamber setting, T_{set}, to the proper *calibrated* T_{SET} we need only determine the difference between the measured data, T_{cmp}, and the desired stress level, T_{CSL} and add accordingly:

$$T_{SET} = T_{set} + (T_{CSL} - T_{cmp}) \quad \text{for case without voltage stress.}$$

One resultant of the case without voltage stress is the constant that exists for any temperature level. The difference between the measured UUT ambient air temperature, T_{amb}, and the averaged component's compartment temperatures, T_{cmp}, is a constant 10.1 °C. Knowing this, we can find the contribution voltage stress has in increasing the average compartment air temperature. From Table D-3 we discover that at any stress Level n, where voltage and temperature stresses are at their designated Step-Stress Test Level per Table 2.3-1, that the heat generated by the components (due to voltage stress) is 0.6 °C times the stress Level n.

The trial test run on the sample UUT was only conducted through to stress Level 8. In the course of Day 4 testing, the unit experienced failure of the A2 Synthesizer (J5) RF power output at stress Level 6 without voltage stress applied. No noticeable effect upon average compartment temperature was observed so testing continued to the end of the

FIGURE D-1: UUT THERMOCOUPLE LOCATIONS



UUT THERMOCOUPLE (TC) IDENTIFICATION

TC1	UUT CHASSIS FLANGE	TC8	A4-AR2 CASE (LINEAR, VIDEO AMP)
TC2	UUT AMBIENT AIR TEMPERATURE (CHAMBER)	TC9	A2-U10 CASE (LINEAR, MULTIVIBRATOR)
TC3	A3 COMPARTMENT AMBIENT AIR (A3 COMPONENTS)	TC10	A3-Q6 CASE (SEMICONDUCTOR,TRANSISTOR)
TC4	A4 COMPARTMENT AMBIENT AIR (A4 COMPONENTS)	TC16	A3-U11 CASE (RF HYBRID, VOLTAGE CNTL OSC.)
TC5	A2 COMPARTMENT AMBIENT AIR (A2 COMPONENTS)	TC17	A3-U3 CASE (ECL INTEGRATED CKT; COUNTER)
TC6	A4-U4 CASE (RF HYBRID, AMPLIFIER)	TC18	A4-U7 CASE (RF HYBRID, LIMITER AMP)
TC7	A4-U11 CASE (LINEAR,COMPARITOR)	TC19	A4-U6 CASE (RF HYBRID, LIMITER AMP)

NOTES:
A2=SYNTHESIZER 1; A3=SYNTHESIZER 2; A4=DUAL DETECTOR OF DETECTOR 1 (LEFT) & DETECTOR 2 (RIGHT).
TC11 THRU TC15 WERE NOT USED.

TABLE D-2: TEMPERATURE STRESS LEVEL DATA WITHOUT VOLTAGE STRESS (n / 0)

Step-Stress Level Temp/Volt	Date (Day) Time (Minutes)	Data pts	Trial Chamber Setting T_{set}	UUT Ambient Air T_{amb}=TC2	Flange Chassis T_{flg} = TC1	Component's Compartment Air A3 TC3	A4 TC4	A2 TC5	Average $\bar{x}$ T_{cmp}	Component Stress Level T_{CSL}	7* Data Reduction ΔT_1 = cmp -amb	ΔT_2 = amb -set	ΔT_3 = CSL -cmp	ΔT_4 = flg -amb	Calibrated Chamber Setting T_{SET}
na / 0 1*	11/25/91 (Day 1) 23:49-00:24 (35)	6	40 1*	40.9 +0.6 -0.6	46.3 +0.6 -0.3	52.0 +0.2 -0.7	49.5 +0.4 -0.4	51.9 +0.4 -0.2	51.1 +1.1 -2.0	70	+10.2 1*	+0.9	+18.9	+5.4	59
0 / 0 2*	11/26/91 (Day 1) 01:04-01:34 (30)	7	60 2*	59.3 +0.1 -0.1	64.5 +0.1 -0.2	71.4 +0.2 -0.3	67.9 +0.4 -0.9	69.8 +0.1 -0.3	69.7 +1.9 -2.7	70	+10.4	- 0.7	+0.3	+5.2	60 2*
0 / 0	11/26/91 (Day 2) 20:42-22:14 (92)	24	61	60.3 +0.2 -0.1	65.6 +0.2 -0.2	71.4 +0.1 -0.3	68.8 +0.2 -0.3	71.0 +0.1 -0.3	70.4 +1.1 -1.9	70	+10.1	- 0.7	- 0.4	+5.3	61
0 / 0	11/27/91 (Day 3) 17:17-17:37 (20)	6	61	60.5 +0.1 -0.1	65.8 +0.1 -0.1	71.8 +0.1 -0.0	69.2 +0.1 -0.1	70.6 +0.1 -0.0	70.5 +1.4 -1.4	70	+10.0	- 0.5	- 0.5	+5.3	61
4 / 0	11/27/91 (Day 3) 14:09-14:17 (08)	3	93	91.3 +0.1 -0.1	97.0 +0.0 -0.0	102.7 +0.0 -0.0	100.2 +0.1 -0.0	101.7 +0.0 -0.0	101.5 +1.2 -1.3	102	+10.2	- 1.7	+0.5	+5.7	94
4 / 0	12/17/91 (Day 4) 13:38-14:34 (56)	15	93	91.2 +0.2 -0.5	3* 96.1 +0.2 -0.5	101.8 +0.1 -0.1	100.0 +0.1 -0.2	101.3 +0.1 -0.0	101.0 +0.9 -1.2	102	+ 9.8	- 1.8	+1.0	+4.9 3*	94
5 / 0	12/17/91 (Day 4) 15:06-16:14 (68)	18	101	98.6 +0.5 -0.5	3* 103.0 +0.2 -0.3	109.4 +0.1 -0.3	107.5 +0.1 -0.4	108.8 +0.1 -0.3	108.6 +0.9 -1.5	110	+10.0	- 2.4	+1.4	+4.4 3*	102
6 / 0	12/17/91 (Day 4) 16:46-18:02 (76)	4* 17	109	106.1 +1.1 -0.7	3* 108.8 +0.4 -0.9	117.1 +0.0 -0.3	115.2 +0.1 -0.3	116.4 +0.1 -0.3	116.2 +0.9 -1.3	118	+10.1	- 2.9	+1.8	+2.7 3*	111
7 / 0	12/17/91 (Day 4) 18:34-19:34 (60)	16	117	113.8 +1.1 -0.8	3* 115.0 +1.1 -2.7	124.9 +0.0 -0.2	122.9 +0.2 -0.2	123.8 +0.8 -0.8	123.8 +1.1 -1.1	126	+10.0	- 3.2	+2.2	+2.0 3*	119
8 / 0	12/17/91 (Day 4) 20:06-21:33 (84)	5* 22	125	121.7 +1.1 -1.0	6* 128.6 +0.1 -0.0	132.6 +0.1 -0.3	130.8 +0.1 -0.3	5* 131.7 +0.7 -0.8	131.7 +1.0 -1.2	134	+10.0	- 3.3	+2.3	+6.9 3*	127

NOTES:

1* Point of trial test origination to determine ΔT_1.
2* First trial test setting to locate T_{CSL} and T_{SET}.
3* TC1 data Day 4 is unreliable; Bad TC1 contact with UUT.
4* No data printout 17:46-17:54 for TC1-TC5; Paper jam.
5* No data printout 20:26 for TC5 (21 pts); Paper jam.
6* Only data printout 20:34-21:30 used for TC1 (15 pts); Bad TC1.
7* ΔT_1 is a constant were no voltage stress is applied..

$$T_{CSL} - (T_{cmp} - T_{amb}) - (T_{amb} - T_{set}) = T_{SET}$$

$$T_{CSL} - \Delta T_1 - \Delta T_2 = T_{SET}$$

OR

$$T_{CSL} - (T_{cmp} - T_{amb}) - (T_{amb} - T_{set}) = T_{SET}$$

$$(T_{CSL} - T_{cmp}) + T_{set} = T_{SET}$$

$$\Delta T_3 + T_{set} = T_{SET}$$

TABLE D-3: TEMPERATURE STRESS LEVEL DATA INCLUDING VOLTAGE STRESS (n / n)

Step-Stress Level(n) Temp/Volt	Date (Day) Time (Minutes)	Dwell Per.	Trial Chamber Setting T_{set}	UUT Ambient Air T_{amb_h}=TC2	Flange Chassis T_{flg_n}= TC1	Component's Compartment Air A3 TC3	A4 TC4	A2 TC5	Average $\bar{x}$ T_{cmp_n}	Component Stress Level 10* T_{CSL}	7* 8* 9* Data Reduction $\Delta T_{1/f\ cmp_n - amb_n}$	$\Delta T_{2/f\ amb_n - set}$	$\Delta T_{3/f\ CSL - cmp_n}$	$\Delta T_{4/f\ flg_n - amb_n}$	Calibrated Chamber Setting 10* T_{SET}
1 / 1	11/26/91 (Day 1) 02:19-02:39 (20)	5	68	$67.1^{+0.0}_{-0.0}$	$72.5^{+0.1}_{-0.0}$	$79.5^{+0.0}_{-0.1}$	$76.1^{+0.1}_{-0.3}$	$77.8^{+0.0}_{-0.1}$	$77.8^{+1.7}_{-1.8}$	78	+10.7 -0.6(1)	- 0.9	+0.2	+5.4	69
1 / 1	11/26/91 (Day 2) 22:46-23:44 (58)	16	69	$68.1^{+0.2}_{-0.1}$	$73.8^{+0.2}_{-0.3}$	$79.9^{+0.2}_{-0.2}$	$77.1^{+0.2}_{-0.3}$	$79.5^{+0.1}_{-0.3}$	$78.8^{+1.3}_{-2.0}$	78	+10.7 -0.6(1)	- 0.9	- 0.8	+5.7	69
2 / 2	11/27/91 (Day 2) 00:16-00:28 (12)	4	77	$75.8^{+0.0}_{-0.0}$	$81.8^{+0.1}_{-0.1}$	$88.3^{+0.1}_{-0.1}$	$85.2^{+0.1}_{-0.0}$	$87.7^{+0.1}_{-0.1}$	$87.1^{+1.3}_{-2.0}$	86	+11.3 -0.6(2)	- 1.2	- 1.1	+6.0	77
3 / 3	11/27/91 (Day 2) 01:00-01:26 (26)	8	85	$83.5^{+0.3}_{-0.1}$	$89.8^{+0.1}_{-0.2}$	$96.8^{+0.2}_{-0.2}$	$93.5^{+0.1}_{-0.2}$	$96.1^{+0.1}_{-0.3}$	$95.5^{+1.5}_{-2.2}$	94	+12.0 -0.6(3)	- 1.5	- 1.5	+6.3	85
4 / 4	11/27/91 (Day 2) 02:00-02:56 (56)	15	93	$91.3^{+0.2}_{-0.1}$	$98.0^{+0.1}_{-0.2}$	$105.6^{+0.2}_{-0.4}$	$101.8^{+0.2}_{-0.2}$	$104.5^{+0.2}_{-0.3}$	$104.0^{+1.8}_{-2.4}$	102	+12.7 -0.6(4)	- 1.7	- 2.0	+6.7	93
4 / 4	11/27/91 (Day 3) 13:13-13:41 (28)	8	93	$91.3^{+0.2}_{-0.1}$	$98.1^{+0.0}_{-0.2}$	$105.7^{+0.1}_{-0.3}$	$101.8^{+0.2}_{-0.2}$	$104.2^{+0.1}_{-0.2}$	$103.9^{+1.9}_{-2.3}$	102	+12.6 -0.6(4)	- 1.7	- 1.9	+6.8	94
5 / 5	11/27/91 (Day 3) 15:05-15:37 (32)	9	101	$98.9^{+0.1}_{-0.1}$	$106.0^{+0.0}_{-0.2}$	$114.2^{+0.1}_{-0.2}$	$110.0^{+0.2}_{-0.2}$	$112.4^{+0.1}_{-0.1}$	$112.2^{+2.1}_{-2.4}$	110	+13.3 -0.6(5)	- 2.1	- 2.2	+7.1	102
0 / 5	11/27/91 (Day 3) 16:21-16:45 (24)	7	61	$60.8^{+0.2}_{-0.1}$	$67.7^{+0.3}_{-0.2}$	$76.2^{+0.4}_{-0.3}$	$71.8^{+0.5}_{-0.3}$	$74.4^{+0.6}_{-0.1}$	$74.1^{+2.5}_{-2.6}$	70	+13.3 -0.6(5)	- 0.2	- 4.1	+6.9	60

7* We find that without Voltage stress applied to the UUT, that $\Delta T_{1_0} = T_{cmp_0} - T_{amb_0}$ is a constant equal to 10.1.

8* Evaluating the effects Voltage stress has upon the thermal rise within the UUT, we find by comparing like Temperature stress Levels n, that: $\Delta T_{1_n} - \Delta T_{1_0} = \Delta T_{1_n} - 10.1 = 0.6 \times n$.

9* We also find that the effects of Voltage stress upon the UUT Ambient Air is negligible compared to the accuracy of the Chamber setting, $\Delta T_{2_n} = \Delta T_{2_0}$.

10* Therefore, we define a Calibrated Chamber setting T_{SET} which directly relates to Component Stress Level T_{CSL} and cancels the effects of Voltage stress and Chamber inaccuracy.

To cancel contributions of Voltage stress to the thermal characteristics, we define: n = stress Level n with Voltage stress also applied.
0 = stress Level n without Voltage stress applied.

$$T_{CSL} - \{(T_{cmp_n} - (T_{cmp_n} - T_{cmp_0})) - (T_{amb_n} - (T_{amb_n} - T_{amb_0}))\} - \{(T_{amb_n} - (T_{amb_n} - T_{amb_0})) - T_{set}\} = T_{SET}$$

$$T_{CSL} - \{(\quad + T_{cmp_0}) - (\quad + T_{amb_0})\} - \{(\quad + T_{amb_0}) - T_{set}\} = T_{SET}$$

$$T_{CSL} - \Delta T_{1_0} - \Delta T_{2_0} = T_{SET}$$

OR

$$T_{CSL} - \{(T_{cmp_n} - (T_{cmp_n} - T_{cmp_0})) - (T_{amb_n} - (T_{amb_n} - T_{amb_0}))\} - \{(T_{amb_n} - (T_{amb_n} - T_{amb_0})) - T_{set}\} = T_{SET}$$

$$T_{CSL} - \{\quad + T_{cmp_0} \quad\} - \{\quad - T_{set}\} = T_{SET}$$

$$\Delta T_{3_0} + T_{set} = T_{SET}$$

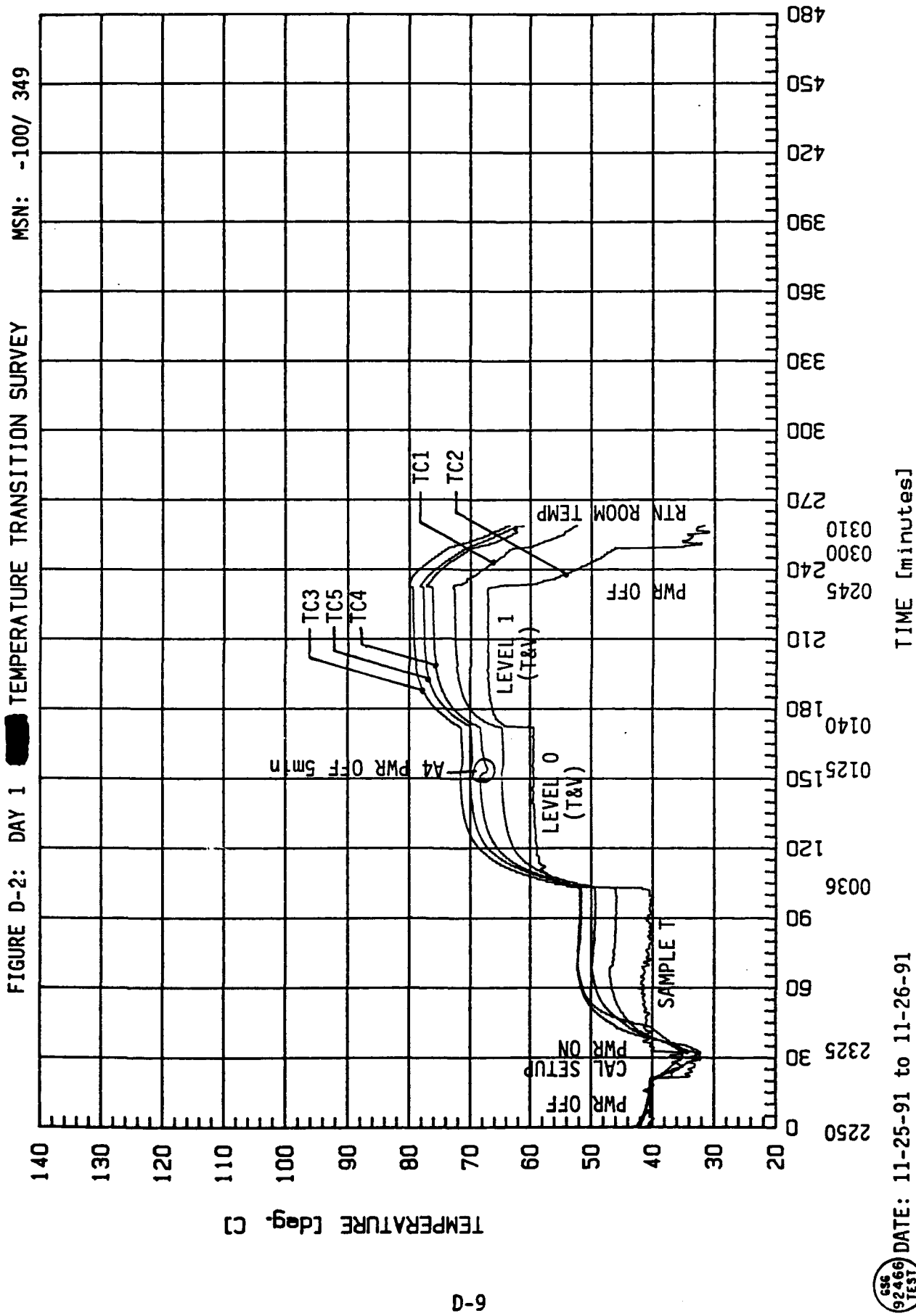
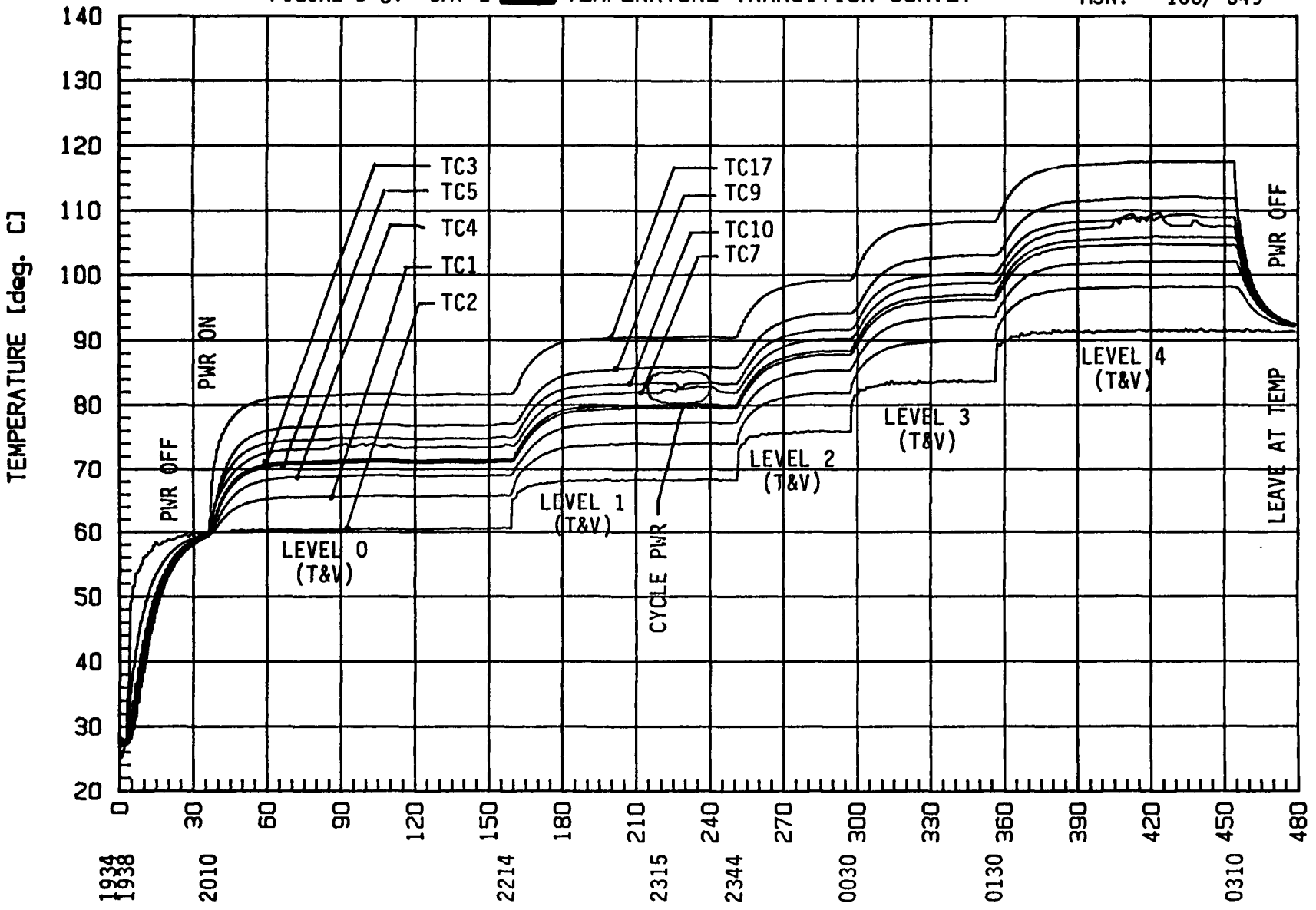


FIGURE D-2: DAY 1 TEMPERATURE TRANSITION SURVEY MSN: -100/ 349
TEMPERATURE [deg. C]
TIME [minutes]
DATE: 11-25-91 to 11-26-91
TC1
TC2
TC3
TC5
TC4
RTN ROOM TEMP
PWR OFF
LEVEL 1 (T&V)
LEVEL 0 (T&V)
A4 PWR OFF 5min
SAMPLE T
PWR OFF
CAL SETUP
PWR ON

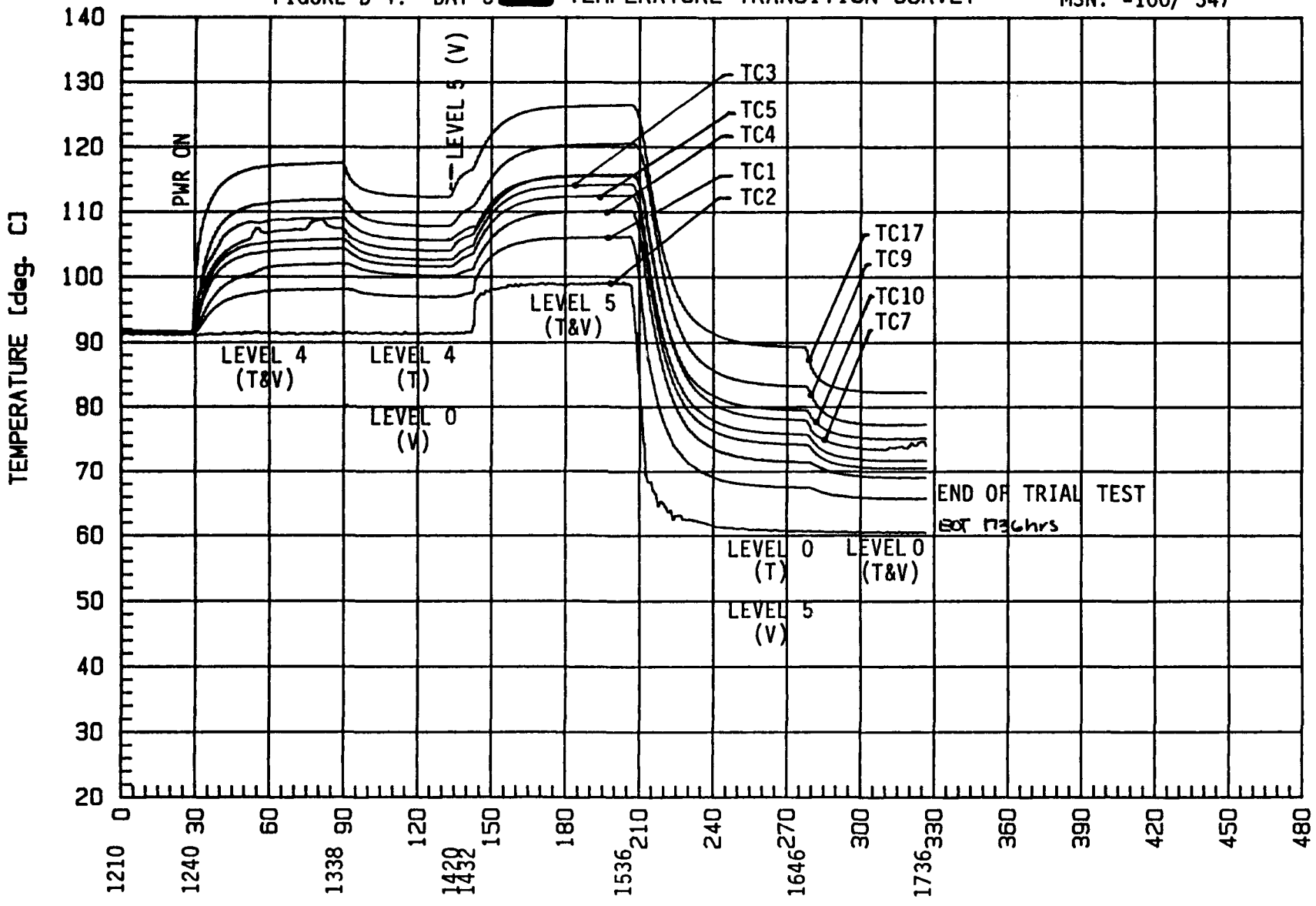
FIGURE D-3: DAY 2 [redacted] TEMPERATURE TRANSITION SURVEY MSN: -100/ 349



GSG 32466 TEST

DATE: 11-26-91 to 11-27-91

FIGURE D-4: DAY 3 [redacted] TEMPERATURE TRANSITION SURVEY MSN: -100/ 347



DATE: 11-27-91

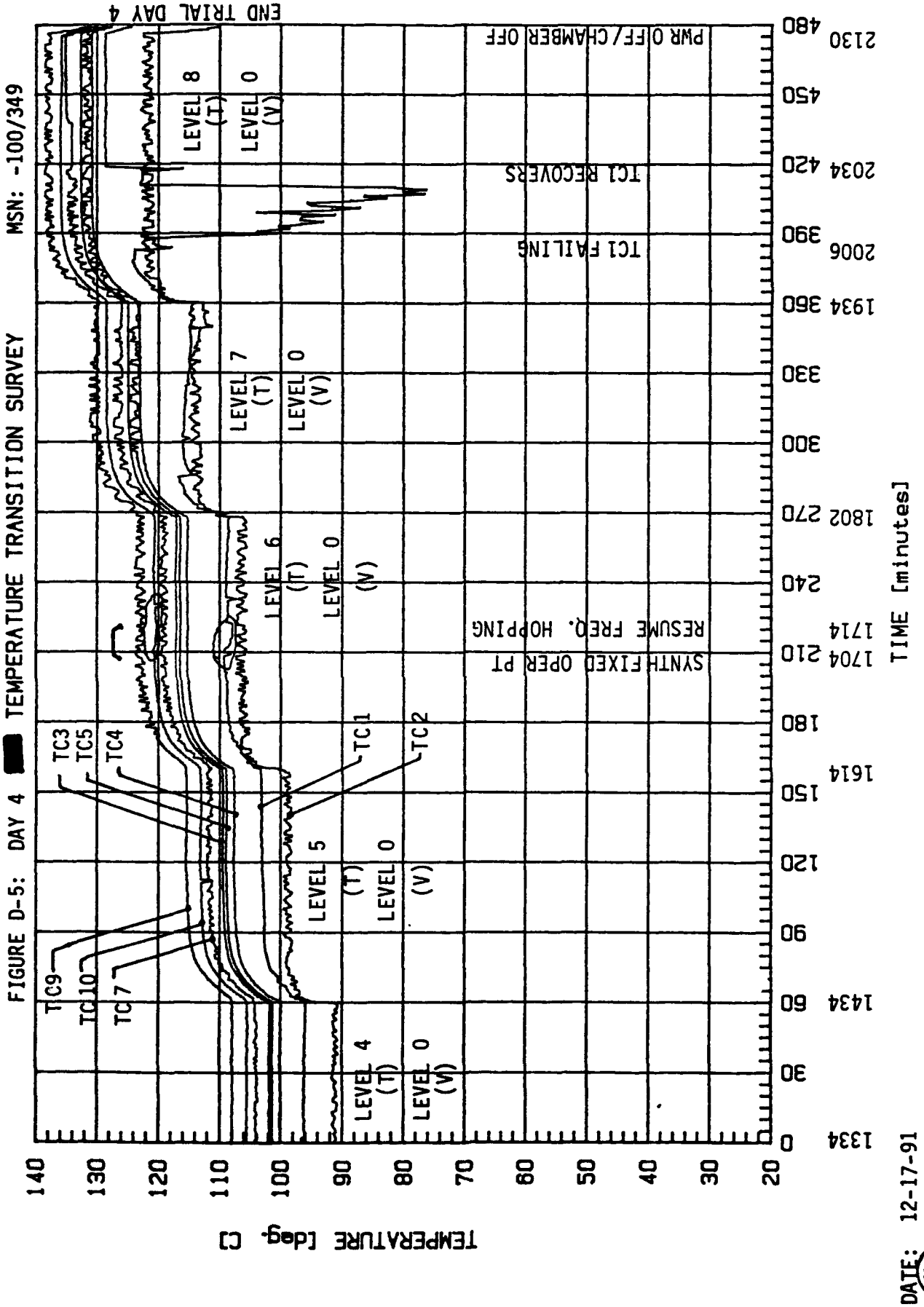


FIGURE D-5: DAY 4 TEMPERATURE TRANSITION SURVEY
MSN: -100/349
END TRIAL DAY 4
PWR OFF/CHAMBER OFF
TC1 RECOVERS
TC1 FAILING
SYNTH FIXED OPER PT
RESUME FREQ. HOPPING
LEVEL 8 (T)
LEVEL 0 (V)
LEVEL 7 (T)
LEVEL 0 (V)
LEVEL 6 (T)
LEVEL 0 (V)
LEVEL 5 (T)
LEVEL 0 (V)
LEVEL 4 (T)
LEVEL 0 (V)
TC1
TC2
TC3
TC5
TC4
TC9
TC10
TC7
TEMPERATURE [deg. C]
TIME [minutes]
140
130
120
110
100
90
80
70
60
50
40
30
20
0
30
60
90
120
150
180
210
240
270
300
330
360
390
420
450
480
1334
1434
1614
1704
1714
1802
1934
2006
2034
2130

DATE: 12-17-91

work day. The calibrated chamber setting for Levels 9 and 10 of Table D-1 were obtained by extrapolating from a graph of the previously determined values.

2.1.2 Environmental Equilibrium. Environmental equilibrium is achieved when the UUT components have realized the changes due to stepping of the ambient air temperature and voltage stresses, and have reached steady-state operation at the new level. Equilibrium has been defined as ≤ 2 °C change over a 1-hour period (≤ 0.5 °C in 15-minutes) for the UUT components. To determine equilibrium, the environmental engineer monitored thermocouple measurements at the locations depicted in Figure D-1, and recorded their values throughout each test run. Figures D-2 through D-5 show those thermocouples plotted during the trial test. The remaining thermocouple data and plots (not shown) are filed in the Engineering Notebook. The engineer utilized the trial test data in achieving the thermal ramp rate and in determining the stabilization time necessary to reach equilibrium prior to beginning of dwell at the new stress level. The resultant of this engineer's effort provides the basis for thermal criteria which will be used to conduct the Step-Stress testing of the seven production (fielded) R/T modules using the designated thermal chamber, HAC ID# H-B07567.

The chamber air temperature, without external control, will inherently ramp at about 3 °C/minute. For a step-stress increase of 8 °C, the effects upon the component's compartment air was a ramp rate less than the 2 °C/minute criteria specified in the Test Plan. Figure D-6, starting at transition time zero, shows that both UUT chassis flange and compartment air temperatures lag the chamber air; and are far less than what can be considered thermal shock per MIL-STD-202 or MIL-STD-810 (air temperature). The condition of ≤ 2 °C/minute, as experienced by the components, remained true for both increasing and decreasing stepped transitions; and could easily accommodate single chamber air steps of 24 °C without using the chamber's programmable controller. This allows the test operator to use the chamber manual mode (see paragraph 2.3.1 of this *Appendix*) for decreasing the chamber setting when verification of an anomaly is warranted per paragraph 2.4.2 of the Step-Stress Test Plan.

As shown in Figure D-6, sufficient time must be afforded to the UUT to undergo the transition to the next Step-Stress level, and achieve equilibrium. This stabilization time is based upon the ramp rate and transition step size, and as determined by the thermal chamber and UUT response. The UUT required at least 20-minutes to reach 90% component stability; with 100% component stability obtained within 40 to 60-minutes. In the Step-Stress testing of the seven production (fielded) R/T modules the stress levels will be controlled at increments of 8 °C (temperature) and 0.2 Vdc/0.3 Vdc (5 and 15 supply voltages, respectively) with each transition preceded by the prior step's 1-hour dwell. Thirty (30) minutes has therefore, been allotted as sufficient component stabilization time from the outset of transition to the beginning of the next dwell period.

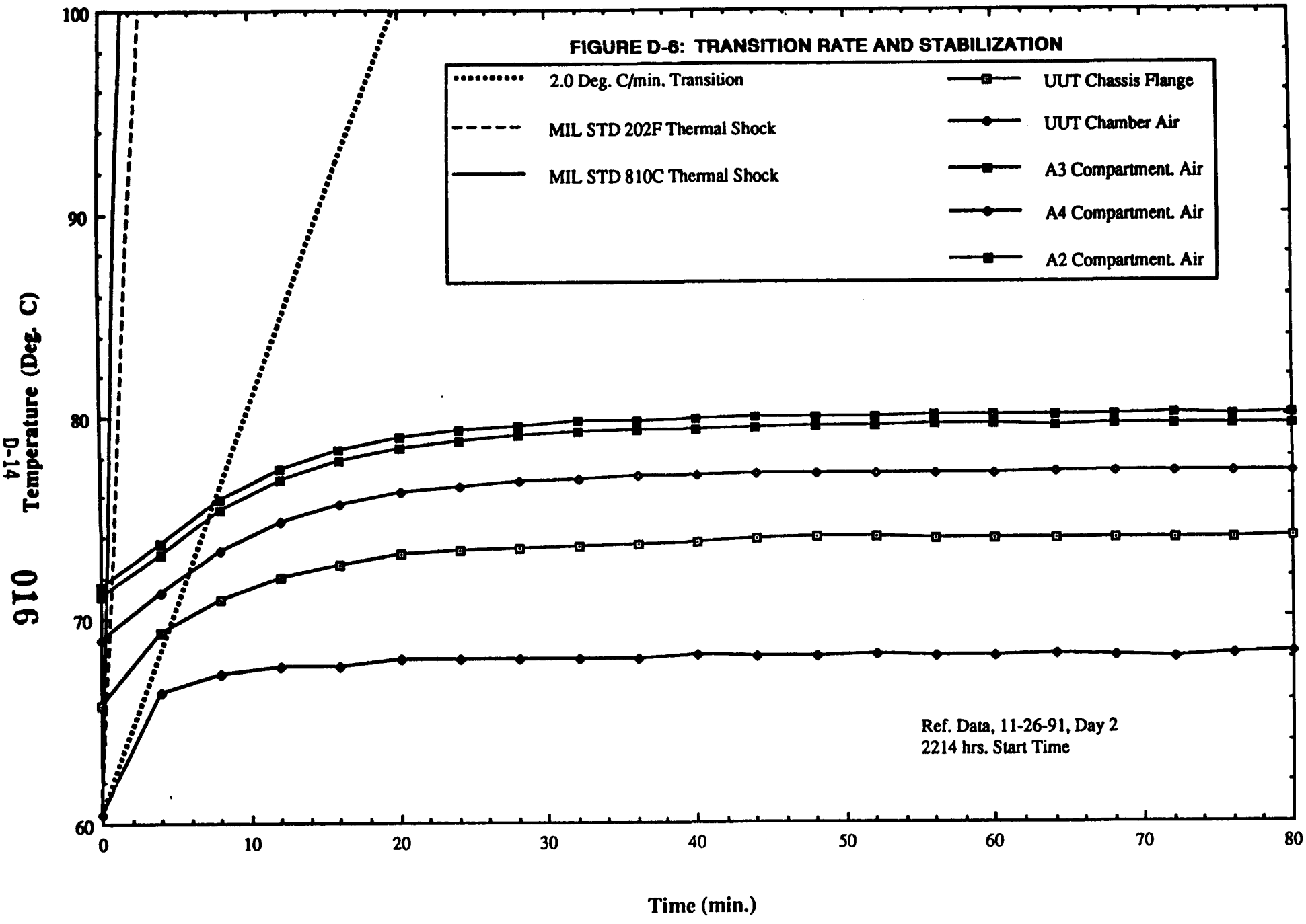


FIGURE D-6: TRANSITION RATE AND STABILIZATION
2.0 Deg. C/min. Transition
MIL STD 202F Thermal Shock
MIL STD 810C Thermal Shock
UUT Chassis Flange
UUT Chamber Air
A3 Compartment. Air
A4 Compartment. Air
A2 Compartment. Air
Ref. Data, 11-26-91, Day 2
2214 hrs. Start Time
Temperature (Deg. C)
Time (min.)
100
90
80
70
60
0
10
20
30
40
50
60
70
80

During Step-Stress testing the UUT ambient air temperature of the chamber and the UUT chassis flange temperature will be plotted. The UUT component and compartment ambient air temperatures track the UUT chassis flange. This flange response can be used to determine the stability of the UUT for cases where greater transitions are necessitated by the Step-Stress Test Profile of Figure 2.3-1 (ie., room ambient to Level 0, Level 10 to Level 0 and room ambient).

2.2 UUT Limitations At Test. A limitation on the performance of the UUT was encountered on the first day of the trial test run. The following documents the event which led to modification of the UUT for subsequent Step-Stress testing.

On Day 1 of the trial test an anomaly occurred with the UUT's Detector card, A4. At an A4 compartment temperature of +68 °C the digital output bits railed to their positive offset indicating a problem with the -5 volt offset voltage, and subsequently the -15 Vdc line from which it is derived. No short circuits or increase in supply currents were indicated on the power supply meter. After completing Level 0 and Level 1 excursions for the day, the unit was returned to room temperature where the problem had ceased and Detector operation had returned to normal.

Upon inspection of the UUT, it was noted that the wirewound 2-watt (at +25 °C) resistor R4 had been extremely hot showing scorch marks on itself, the zener diode VR1, the printed wiring board, and the tantalum capacitor C4 beside it. In addition, the thermocouple wire for TC8 which was routed above R4 had singed insulation, explaining the overload condition recorded for TC8. TC8 was inspected with no breaks in insulation found, therefore ruling out the possibility that the wires had caused a short circuit. TC8 was used for the remainder of the three days of trial testing.

The -5 volts is derived from the -15 Vdc supply line using a series 93.1 ohm power resistor R4 and 5.1 volt zener diode VR1. The resistor should typically operate at 1-watt, or 50% of its capacity. MIL-HDBK-217 Table 5.1.6.4-8 and MIL-R-39007 Figure 6 (RWR80-type resistor) indicates that temperatures up to +150 °C are applicable for this percentage of rated power. The temperature of R4 & VR1 were measured Day 1 with a spare thermocouple inside the chamber with the UUT cover removed. The chamber air was measured at +33 °C (TC2). R4 was found to be 35 °C hotter than the chamber air, with VR1 18 °C warmer.

It is possible that with the covered UUT A4 compartment temperature at +68 °C, that the resistor R4 temperature was upwards of +100 °C, but still within rating. Through convection of heat to the surroundings, R4 effectively heated up the adjacent zener diode VR1 and thermally causing it to cease normal operation. The scorching of adjacent surroundings is a supporting observation. On conformally coated A4 Detector

cards the design engineer has also observed scorching of the conformal coating in direct contact with the power resistor A4 in the past, but has never encountered a failure at specified operating temperature. The conformal coating may impede the convection of heat to VR1 and provide heat transfer by conduction to the card's ground plain thus alleviating this thermal shut-down effect as observed in the trial test run.

The trial testing for the remaining three days proceeded with a modification to the sample unit. Resistor R4 and zener diode VR1 were removed entirely from the circuit and an external -5.1 Vdc auxiliary supply was used to provide the necessary regulated fixed voltage to the circuitry.

On 3 December 1991 this event was discussed at the technical interchange meeting of the joint industry/government Process Action Team. Through our discussion a compromise was reached which would allow removal of the "weak link" created by thermal effects of R4 and VR1 which could dominate and obscure the Detector operation at increasing Step-Stress levels beyond the UUT's maximum operating specification. The compromise required that only the R4/VR1 produced output could be isolated from the circuit and that it must be monitored across a suitable external load resistor. This gives a comparable operating environment to R4 and VR1. The dependent circuitry will then be supplied by an external -5 volt auxiliary supply in substitution for the R4/VR1 output. The dependent circuitry would be considered as being driven by a regulated source allowing the auxiliary supply to be fixed at a constant -5 Vdc throughout the test.

2.2.1 Pretest Conditioning-UUT Modification. Modification of the Detector card's R4/VR1 circuitry on each UUT prior to test is detailed in the Rework/Modification Planning which follows. Prior to applying power to the UUT, the modification should be visually inspected and continuity tested. Provided in paragraph 2.3 of this *Appendix* are the test setup, test procedure, and supplemental data sheet to be used in association with the modification for UUT Step-Stress testing.

2.3 Test Setup & Procedures. The following establishes the requirements for test setup and procedures necessary for utilizing the special test box as shown set up in Figure D-7. The test box allows measurement of supply currents and a supplemental test for the UUT modification as follows:

A) To monitor and then measure the UUT's supply currents at dwell utilize the test points provided on the special test box. The test points are connected across each voltage supplies 0.1 ohm sense resistor, allowing current to be measured with a voltmeter. The voltage reading taken must be multiplied by 10 (as instructed on the test box) to convert to the proper milliampere (mA) reading.

CAUTION!! THIS ASSEMBLY IS STATIC SENSITIVE!! HANDLE PER MHI 8.53.19

REWORK/MODIFICATION PLANNING

PROJECT: [redacted]

HUGHES GROUND SYSTEMS GROUP

SLR NO.	PLANNED BY S. D. MUELLER DATE 12/13/91	QUALITY OPERATIONS	PART NO. [redacted]-103
IDR NO.	CHECKED BY DATE 12/16/91		NAME SYNTHESIZER/DETECTOR ASSY
HRT NO.	CHANGED BY DATE		LEVEL UNIT, SRU
DDT NO.	REASON FOR REVISION		WORK ORDER NO.
OTHER	N = MODIFY FOR STEP STRESS TEST (A4 CCA R4 & VR1 MONITORING AND AUX -5 V SUPPLY)		QTY. OF PARTS 1
MFG. DEG. NO / FROM / THRU			

OPER NO.	ORG. SOURCE	OPERATION DESCRIPTION
		CAUTION: THE FOLLOWING MOD WILL BE PERFORMED FROM THE COMPONENT SIDE OF THE A4 DETECTOR CCA P/N [redacted] WITHOUT REMOVING THE CCA FROM THE CHASSIS.
		NOTE: ALL WORK TO BE PERFORMED IN ACCORDANCE WITH WCM VOL II.
10	1A-K5-55	OBTAIN SYNTHESIZER/DETECTOR ASSEMBLY P/N [redacted]-103 AND ROUTE TO REWORK LINE.
20	1A-55-50	REMOVE ASSEMBLY COVER AND SAVE HARDWARE. READ CAUTION ABOVE.
30	1A-55-50	REMOVE CONFORMAL COAT FROM LEADS AND PADS OF A4-R4 (P/N RWR80S93R1FM) AND A4-VR1 (P/N JANTX1N751A-1).
40	1A-55-50	AT PAD OF VR1 (NEAR U7 HYBRID), CLIP VR1 LEAD LEAVING 1/10-INCH LEAD PROTRUSION FROM PAD.
50	1A-55-50	SOLDER 8-FT OF RED 22 GA WIRE (P/N 4297840-155, OR EQUIV.) TO LEAD PROTRUDING FROM PAD LEFT FROM OPER. NO. 40 ABOVE.
60	1A-55-50	SOLDER 8-FT OF WHT-RED-GREEN 22 GA WIRE (P/N 995442-925, OR EQUIV.) TO GROUNDED LEAD AT OPPOSITE END OF VR1.
70	1A-55-50	REMOVE SOLDER FROM FEEDTHROUGH HOLE OF PAD AROUND LEAD OF R4 (NEAR U7 HYBRID) AND PULL R4 LEAD AWAY FROM PAD.
80	1A-55-50	WRAP LEAD OF R4 AROUND REMAINING LEAD OF VR1. WRAP AND SOLDER 8-FT OF GREEN 22 GA WIRE (P/N 4297840-208, OR EQUIV.) TO JOIN LEADS.
90	1A-55-50	ISOLATE LEADS OF OPER. NO. 80, ABOVE, FROM SHORTING TO PWB USING BONDING COMPOUND (P/N 760595, OR EQUIV). AIR CURE.
100	1A-55-50	ROUTE WIRES TO EXTERIOR OF CHASSIS, CENTERING OVER J2 CONNECTOR. USE ADDITIONAL SLEEVING OVER WIRES TO PROTECT FROM DAMAGE BETWEEN CHASSIS AND COVER.
110	1A-55-50	INSTALL COVER ON ASSEMBLY, OMITTING SCREWS ON EACH SIDE OF J2 CONNECTOR. TORQUE 8 IN-LB.

CAUTION!! THIS ASSEMBLY IS STATIC SENSITIVE!! HANDLE PER MHI 8.53.19

REWORK/MODIFICATION PLANNING

PROJECT: [redacted]

HUGHES GROUND SYSTEMS GROUP

SLR NO.	PLANNED BY S. D. MUELLER DATE 12/13/91	QUALITY OPERATIONS	PART NO. [redacted]-103
IDR NO.	CHECKED BY DATE		NAME SYNTHESIZER/DETECTOR ASSY
HRT NO.	CHANGED BY DATE		LEVEL UNIT, SRU
DDT NO.	REASON FOR REVISION		WORK ORDER NO.
OTHER	N = MODIFY FOR STEP STRESS TEST (A4 CCA R4 & VR1 MONITORING AND AUX -5 V SUPPLY)		QTY. OF PARTS 1
MFG. DEG. NO / FROM / THRU			

OPER NO.	ORG. SOURCE	OPERATION DESCRIPTION
		CAUTION: THE FOLLOWING MOD WILL BE PERFORMED FROM THE COMPONENT SIDE OF THE A4 DETECTOR CCA P/N [redacted] WITHOUT REMOVING THE CCA FROM THE CHASSIS.
		NOTE: ALL WORK TO BE PERFORMED IN ACCORDANCE WITH WCM VOL II.

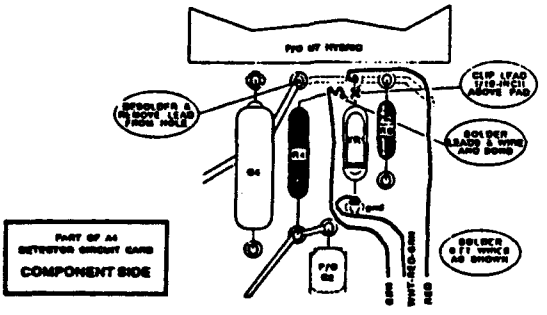
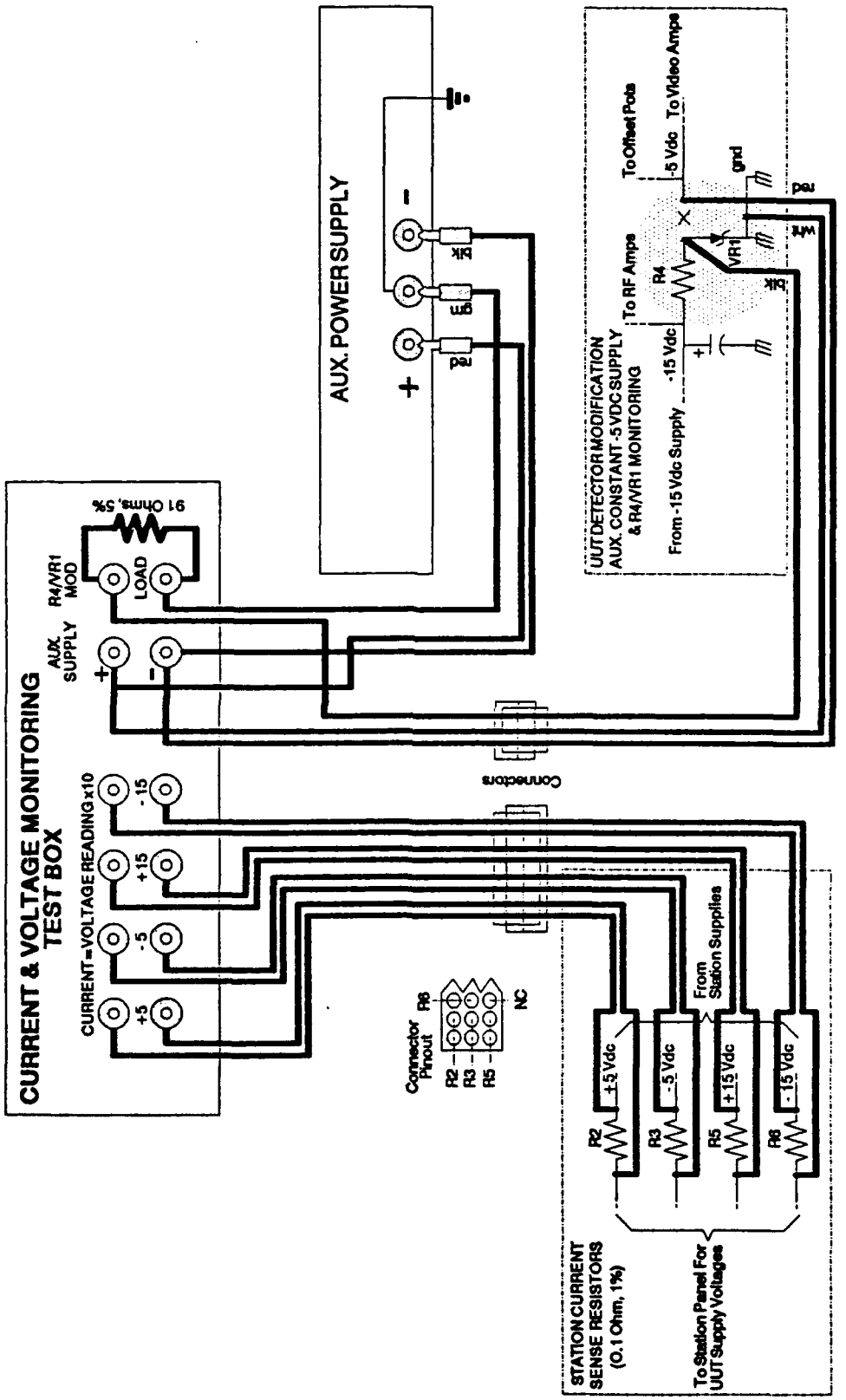


FIGURE D-7: SPECIAL TEST BOX SETUP



B) The load resistor for the R4/VR1 output modification to the UUT (paragraph 2.2 of this *Appendix*) is also provided by this test box. The current requirements of the dependent circuitry was measured on the sample unit using an auxiliary -5.1 Vdc supply. A 91 ohm load resistor is serving as the load. A Supplemental Step-Stress Test Data Sheet is supplied in this *Appendix* D, and is used to record the R4/VR1 voltage across this load at each Step-Stress level test. An auxiliary supply connected to the test box provides the regulated voltage to the dependent circuitry. The auxiliary supply is to be fixed at a constant -5.1 Vdc throughout the test.

2.3.1 Chamber Programming Guide & Profile. Control of the UUT's thermal environment is provided by utilizing the programmable functions of the thermal chamber, Model S-4 with Model 2800 controller. Included in this *Appendix* is a two page Chamber Programming Guide and Chamber Program Profile providing the operating instructions and programs for the chamber.

Program #1 takes the UUT from room temperature up to the starting point for the test, Step-Stress Level 0. The test operator is allowed a maximum of 2-hours at Interval 2 to verify the test setup, voltage stress settings, and assure UUT thermal stabilization prior to proceeding to Program #2 and beginning the Step-Stress testing.

Program #2 is used to conduct the Step-Stress test, establishing the calibrated chamber setting, transition rate, and stabilization/dwell times for each Step-Stress Level for the duration of the test. The program begins with the 1-hour dwell at Level 0 where testing per Test Plan paragraph 2.6 commences. The program continues with a 1-minute transition Interval to the next Level and is maintained for 1-hour 29-minute at that Level. The UUT experiences a ≤ 2 °C/minute ramp, shall be allowed 30-minutes stabilization time by the tester, and UUT testing during the remaining 1-hour dwell. Program #2 continues automatically through to Level 10.

Manual mode operation is required for failure verification of an anomaly requiring interruption of Program #2 to return to the previous Step-Stress Level per Test Plan paragraph 2.4.2. Manual mode operating instructions are provided in the Chamber Programming Guide. If the anomaly cannot be substantiated, the operator selects the Program #2 Interval of the next Step-Stress level after the Step-Stress level where the non-confirmed failure originated. The even-numbered Intervals provide these transitions using the operating instructions in the Programming Guide.

Program #3 is used to return the UUT to Level 0 for retest upon verification of a failure during the Step-Stress test. Program #3 Interval 3 will return the UUT to room temperature as will Program #4.

SUPPLEMENTAL (APPENDIX D)
STEP-STRESS TEST DATA SHEET

UUT Serial Number (enter MSN): _____ **Test Date:** _____

Tester: (Name & stamp below)

STEP-STRESS Level (enter 0 - 10): _____ _____

UUT PERFORMANCE TEST DATA — PERFORMANCE MONITORING

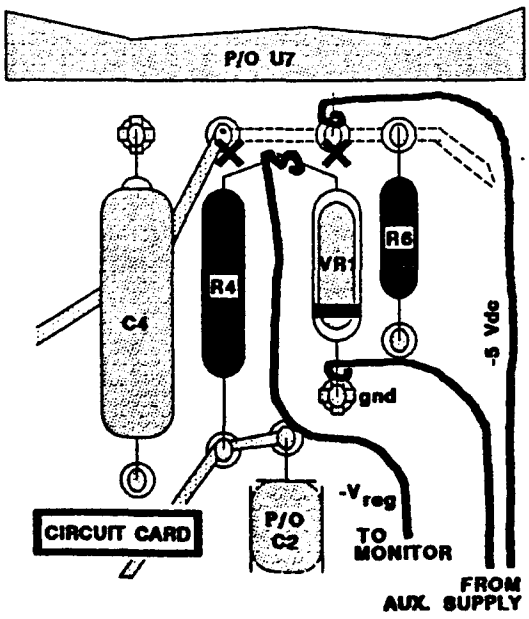
RESISTOR/ZENER DIODE MODIFICATION: At Dwell; For the modified resistor/zener diode subcircuit, record the voltage across the LOAD RESISTOR at this STEP-STRESS Level.

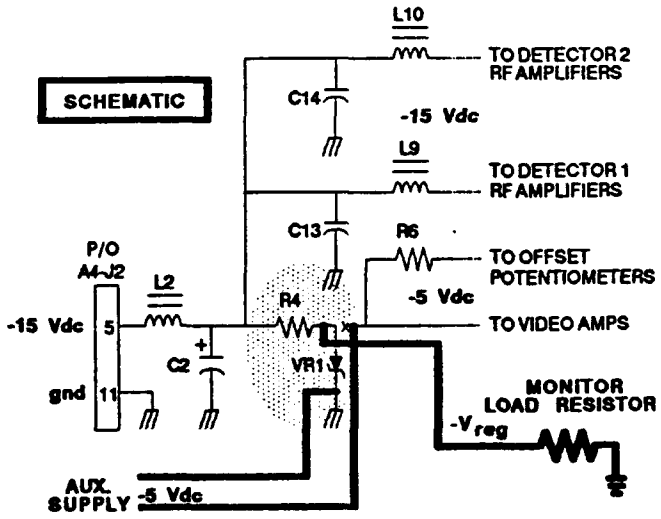
Start TEST: _____ (TIME HR:MIN)

Voltage across LOAD RESISTOR: _____ (Vdc) (refer to *Appendix D*; nominally -5 Vdc)

End TEST: _____ (TIME HR:MIN)

DETAILS: A4 DETECTOR CIRCUIT CARD MODIFICATION
FOR AUX. CONSTANT -5 Vdc SUPPLY
AND R4/VR1 MONITORING





CHAMBER PROGRAMMING GUIDE

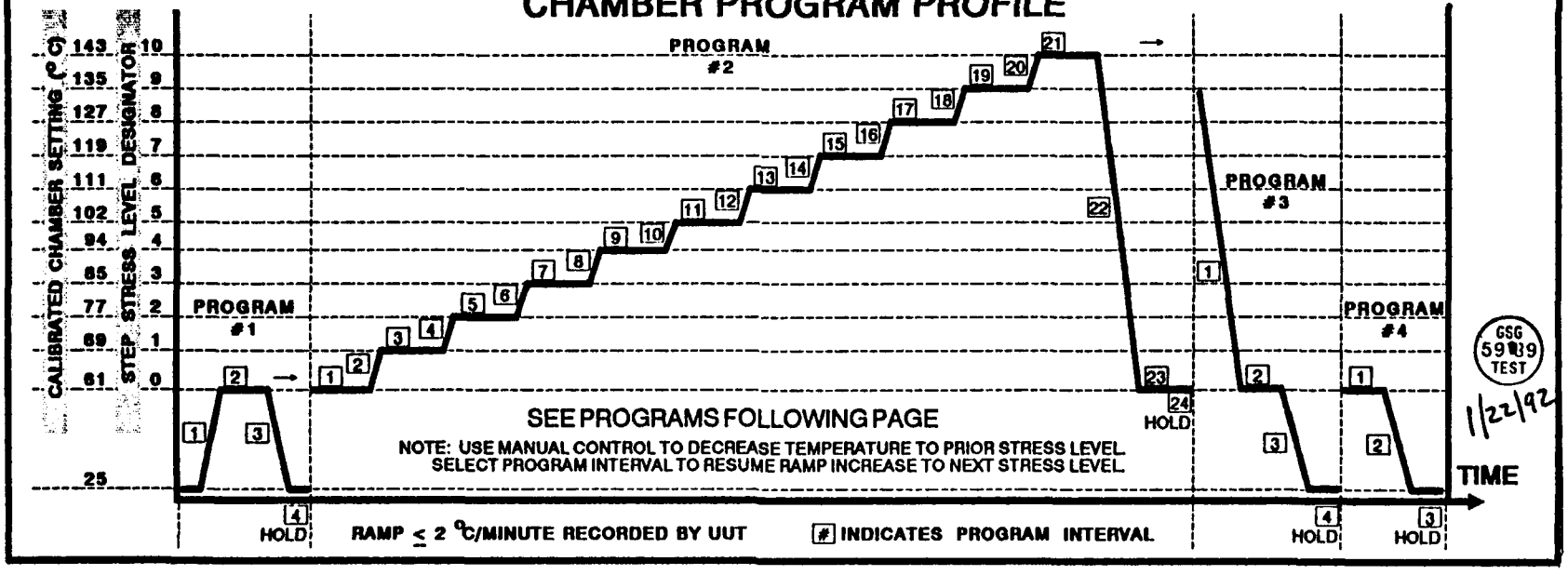
SETTING TEMP ALARMS: Prior to using Chamber, set the LOW and HIGH alarms for auto shutoff in case of over temp condition. Press [SETUP] key. Press the hidden [Y] key located behind the "TROL" letters between the two displays. Press [ENT] key twice. Enter the LOW and then HIGH alarm temperatures (°C). Press [STOP] key to end.

MANUAL MODE OPERATION: Press [STOP] key. (CODE 1 displayed) Press [RUN] key. (PROG/MAN? displayed) Press [MAN] key. Press [4 VALUE] key, until SET-PNT is displayed. Press [EDIT] key. Enter the SET-PNT temperature (°C). Press [ENT] key. Chamber will be driven to setpoint temperature.

TO RUN A PROGRAM INTERVAL: Press [STOP] key. (CODE 1 displayed) Press [RUN] key. (PROG/MAN? displayed) Press [PROG] key. Enter PROGRAM NMBR. Press [ENT] key. Enter INTERVAL number. Press [ENT] key. Toggle [STOP] key. Chamber should resume with PROGRAM INTERVAL entered.

To verify status press [4 VALUE] or [5 TIME] keys repeatedly to scroll through variables while running program.

CHAMBER PROGRAM PROFILE



TO PROGRAM CHAMBER: Press STOP key. (CODE 1 displayed). Press PROG key.
Enter PROGRAM NMBR. Press ENT key following each value entered.

PROGRAM NMBR	1	2	3	4
INIT VAL 1 (°C)	25	61	133	61
INTERVAL	1	1	1	1
FINAL VAL (°C)	61	61	61	25
INTVL TIME (HR.MN)	0.18	1.0	0.36	0.18
AUX	—	—	—	—
NEXT INT	2	2	2	2
INTERVAL	2	2	2	2
FINAL VAL (°C)	61	69	61	25
INTVL TIME (HR.MN)	2.0	0.01	3.0	1.0
AUX	—	—	—	—
NEXT INT	3	3	3	3
INTERVAL	3	3	3	3
FINAL VAL (°C)	25	69	25	Press STOP key.
INTVL TIME (HR.MN)	0.18	1.29	0.18	
AUX	—	—	—	
NEXT INT	4	4	4	
INTERVAL	4	4	4	
FINAL VAL (°C)	Press STOP key.	77	Press STOP key.	
INTVL TIME (HR.MN)		0.01		
AUX		—		
NEXT INT		5		
INTERVAL		5		
FINAL VAL (°C)		77		
INTVL TIME (HR.MN)		1.29		
AUX		—		
NEXT INT		6		

Continue PROGRAM 2: Repeat INTERVALs 4 and 5 above using VARIABLEs below.

INTERVAL	6&7	8&9	10&11	12&13	14&15	16&17	18&19	20&21
FINAL VAL (°C)	85	94	102	111	119	127	135	143

INTERVAL		22	
FINAL VAL (°C)		61	
INTVL TIME (HR.MN)		0.40	
AUX		—	
NEXT INT		23	
INTERVAL		23	
FINAL VAL (°C)		61	
INTVL TIME (HR.MN)		3.0	
AUX		—	
NEXT INT		24	
INTERVAL		24	
FINAL VAL (°C)		Press STOP key.	
INTVL TIME (HR.MN)			
AUX			
NEXT INT			

1/22/92 GSG 59189 TEST

HOLD key interrupts & holds INTERVAL time and temperature. RUN key continues program INTERVAL.

SECTION 2

Thermal Evaluation Test Journal
prepared by B. J. Armstrong

HUGHES
GROUND SYSTEMS GROUP

THERMAL EVALUATION ENGINEERING GROUP TEST JOURNAL NO. 118

PG'M/CUSTOMER [redacted] THERMAL SURVEY

TEST TYPE S. MUELLER

W.A. 1377 B44 B4 A1 A1

026

ENGINEER'S TEST INSTRUCTION SHEET

ENGINEER: B. Armstrong PHONE: 732-3071

TYPE OF TEST: (Thermal Vacuum, Airflow, etc.) Thermal Survey

CHARGE NO: W.A.:

PROGRAM NAME: [redacted] TEST UNIT:

TEST PERSONNEL (Test Engineer, Technician, Program Support, etc.):

B. Armstrong, S. Mueller Test location: [redacted] LAB, 6076 Room: X139

START DATE: 11-25-91 TESTING PERIOD: 2-3 days

INSTRUMENTATION AND EQUIPMENT NEEDED:

TEST PARAMETERS:

+61°C, ... ~+125 in +8°C Δ increments

SPECIAL INSTRUCTIONS:

CUST: STEVE MUELLER, 1A-72

Date: _____

Ancillary Test Equipment Used

Name/Description	Manufacturer	Model	Ident. No.	S/N	Calib. Due Date
HP 85 Computer	HP	85		6595184	
Plotter	HP	7470A		H512478	
Printer	HP	INKJET		A51399	
Data Acquisition Unit	HP	3497A		H28499	

Data Recorder: _____

027

Test Data

Date: 11-20-91

1100hrs: Transported Datalogger, plotter, Printer, HP85 & cart over to [redacted] Shock Lab to be assembled & await for [redacted] test in laboratory next door.

1500hrs: Temp. acquisition system, printer, plotter connected and running. 15 TC's.

1600hrs: Test system has been running ≈ 1hr w/o problems. Talked to S. Mueller concerning test:

plotter
1) Need to change "time" to ≈ 8hrs from 12hrs ("PSRPLO" program)
2) Need to change "temperature" to ≈ 20°C – 140°C from 0°C – 60°C
3) Need to check TC wires for integrity @ ≈ 140°C & Tape

11-21-91

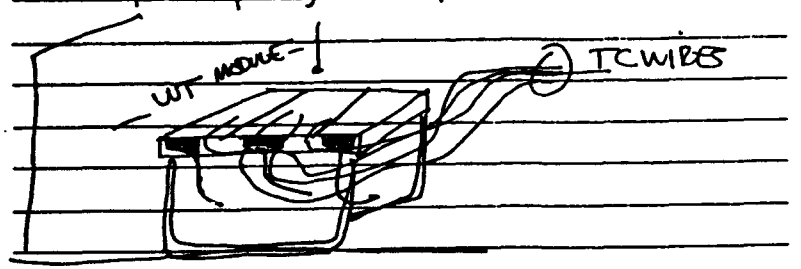
0800hrs: Tested Kapton tape / TC. @ ≈ 130°C, tape loosened & casing started to melt. will make 5 New TEFLON WIRES TO BE USED ~~ported~~ cemented to the HiT hybrids which are expected to reach 140°C-150°C

Data Recorder:

Test Data Cont'd: Date: 11-25-91

1700hrs: Arrive @ [redacted] LAB v/ Test Equipment (MS 676, X139)
Moved equipment over behind small Thermotron test chmbr HB01567 9-2-92

Thermocouple locations are as indicated in attached Layout. Added & chn'l to "[redacted]LO6" Program (TC1–TC19). The Last 4 TC's wires extra insulated to guard against excessive heat.
Test module sitting atop folder-holder from filing cabinet



NOTE: 1/2 TC WIRES KAPTON'D
1/2 TC WIRES DOWN CEMENTED

2215hrs: Set chmb'r manually for 40°C
2250hrs: Reload Program / Plot & enter TC1-TC5 for Plots. Chmb'r SP will be elevated until TC3, TC4, TC5 ≈ 71°C
Add'd New printer Paper.

Data Recorder:

Test Data Cont'd: Date: 11-25-91

2315hrs: Screwing Top Cover on UUT; Test station has been cal'd, Chmb'r set to 40°C

2325hrs: All TC's secure, cover tightened, chmb'r door closed. Let chmb'r stabilize @ 40°C for ≈10mins

2345hrs: Chn'l 00, stabilizing power on "nominal" will hold @ these cond's until ≈ 0100hrs (11-26)

11-26-91

0030hrs; Temps ≈ stab'l, change Chmb'r SP to 60°C & Stab'lize

0036hrs; TC8 "overload" Middle section "A4" having elec. problems

≈ 0140hrs; Temps stab'l, set chmb'r to 68°C

≈ 0245hrs; Temps stab'l; end Test, open chmb'r door Visial Inspection; Note: wire (TC8) to AR2 video amp. is SEVERELY SINGED. The wire runs across R4 (very hot, 1W) and VR1. Both ran hot. When allowed to cool, TC8 worked agn.
R4 & VR1 Note: R4 & VR1 were operating at or exceeding max. derating values.

Data Recorder:

Test Data Cont'd: 1915hrs Date: 11-26-91

0715hrs: Steve has soldered leads to VR1 (-5V, & GND). Used External -5V supply. Plan is to re-run 60-68°C Chmbr trans & stabilizations & final ΔT max of Module Screw (TC1) & Time-to-stabilize for A2, A3, A4 Compartment air.

Reloaded Plot/Print program 1min / 4min Print

Monitoring the following:

TC1 – UUT screw (base)		TC7
TC2 – Chmbr AIR		TC8
TC3 – A3	Compartment Air	TC10
TC4 – A4		TC17
TC5 – A2		

Chmbr bulb removed from inside.

1938hrs: Chmbr Set Pt to +61°C. UUT off will stabilize @ +61, then apply power.

2010hrs: TC's stab'l @ 59-60°C; UUT EXERCISED

2058hrs: Start 1st of system test @ 60°C

2211hrs: End of Elec. Testing @ 60°C.

2214hrs: Raising Chmbr SP 8°C to 69°C

2249hrs: UUT stable. Start Elec. test (t=197.5min on Plot)

2315hrs: Steve cycling power to unit

Data Recorder: BA

Page 6

Test Data Cont'd: Date: 11-26-91

2344hrs: Change chmbr set pt from 69°C to 77°C (+8°C Δ)

11-27-91

0030hrs: Change chmbr S.P. to +85°C from +77°C (+8°C Δ)

A 0130hrs: change SP to +93°C

0305hrs: End of test (for today). Pwr-off. Leave UUT @ 93°C soak until tomorrow (Testing will resume @ 93°C)

Data Recorder: BA

Page 7

029

Test Data Cont'd: Date: 11-27-91

1200hrs: Re-Started Printer/Plotter
Chmbr temp 91°C (Stress Level 1, High Voltage)

1240hrs: Turned pwr "on" to UUT

1330hrs: Temps stabilizing: TC17 @ 117.6°C
Dropping Voltages to nominal Levels.
(Volt down to ±5.000, ±15.000 from ±5.8, ±16.2)
level "0" ⇒ 61°C chmbr

1420hrs: Increasing voltages to "higher stress" levels from nominal (±5.8, ±16.2)

1432hrs: Raise SP to 101°C (±6V, ±16.5V)
level 5 temp, level 5 voltage

1536hrs: Reduced SP back down to 61°C
(Note: Voltage still @ level 5)

1646hrs: Reducing VOLTAGE Back to level "0" (ie 60°C params)

1719hrs: Start abbrev test (~15 min)

1736hrs: End of Test

Data Recorder: _____

Page 8

030

PROJECT [redacted]	HUGHES AIRCRAFT CO. FULLERTON, CALIFORNIA	PAGE 1 OF
ASSEMBLY MODULE TEMP TEST		ANALYST B ARMSTRONG
UNIT	ANALYSIS WORK SHEET	DATE 12-2-91

"HOTTEST" RANKING

TC1	UUT BASE SCREW	8
TC2	CHMB'R AIR	9
TC3	A3, COMPT AIR	5
TC4	A4, COMPT AIR	7
TC5	A2, COMP'T AIR	6
TC7	A4, U11 CHIP	4
TC9	A2, U10 CHIP	2
TC10	A3, Q6 TRANS	3
TC11	A3, ECL CHIP	1

MAX ΔT: 26°C
$\Delta T_{ECL-AMB}$

From MECL Book:
A) C 25°C ⇒ $P_{max} = 1.4W$
$\theta_{J-C} = 25°C/W$
$T_J = T_A + (1.4)(25)$
$= T_A + 35°C$

1) $\Delta T_{chassis\,AIR} \simeq 6°C$

2) 1.5-2°C chassis Temp drop from Volt. drop to "0" level
6°C ECL chip drop " " ; other TC's ΔT's less

3) ≈1¼hrs to re-stabilize from +101 to +61 °C

4) For each +8°C raise, TC's stabilized
A) TO 90% after 20min
B) Actuall stab'l 40-60min

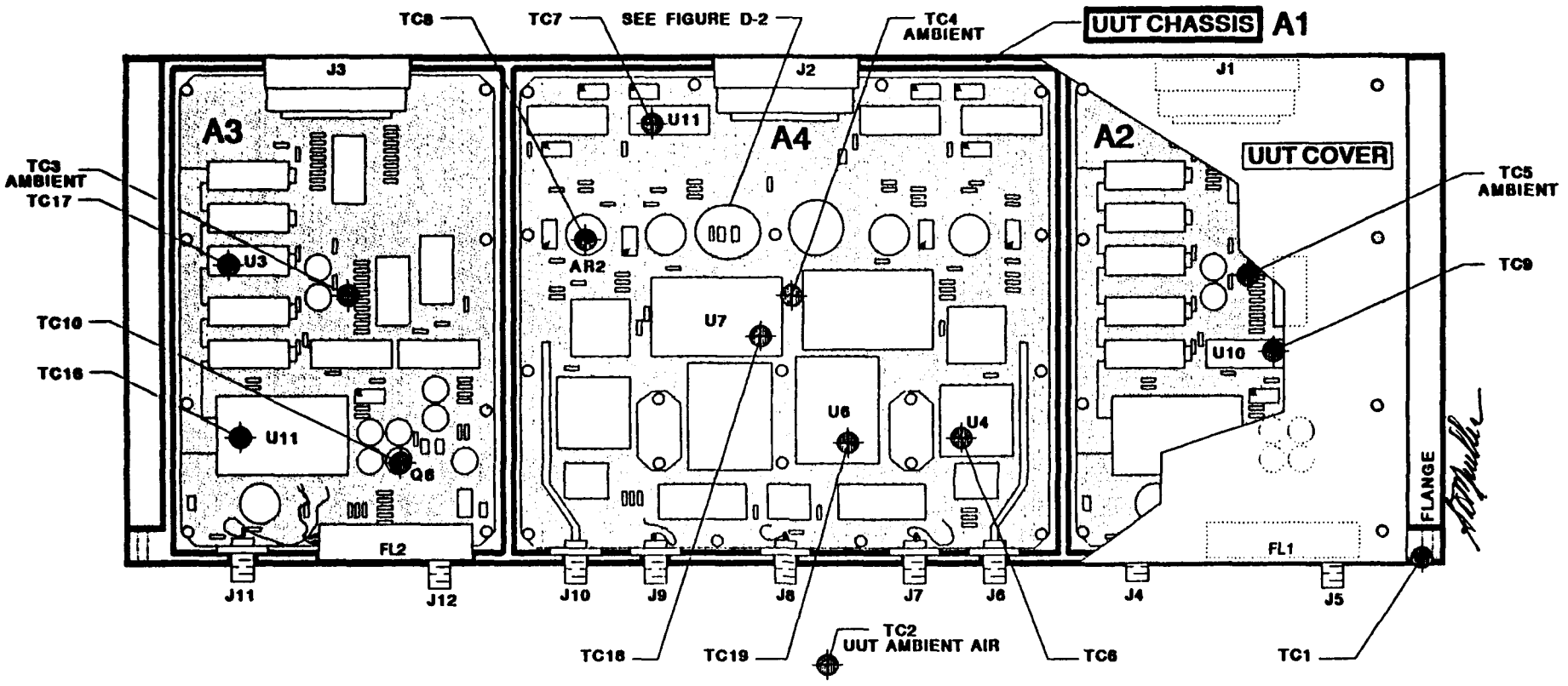
5) RUNNING FUNCTIONAL TESTING;
NO NOTICABLE Temp. rise EXCEPT TC7 (U11 CHIP)

6) Although chmbr ramp rate > 2°C/min,
All monitored TC's < 2°C/min

7) ΔT's spread increased (slightly) w/ higher temps
$\Delta T_{COMP-chmbr} \simeq 16°C$
$\Delta T_{ECL-chmbr} \simeq 26°C$

14-681 GS 9/74

FIGURE D-1: UUT THERMOCOUPLE LOCATIONS



UUT THERMOCOUPLE (TC) IDENTIFICATION

TC1	UUT CHASSIS FLANGE	TC8	A4-AR2 CASE (LINEAR, VIDEO AMP)
TC2	UUT AMBIENT AIR TEMPERATURE (CHAMBER)	TC9	A2-U10 CASE (LINEAR, MULTIVIBRATOR)
TC3	A3 COMPARTMENT AMBIENT AIR (A3 COMPONENTS)	TC10	A3-Q6 CASE (SEMICONDUCTOR,TRANSISTOR)
TC4	A4 COMPARTMENT AMBIENT AIR (A4 COMPONENTS)	TC16	A3-U11 CASE (RF HYBRID, VOLTAGE CNTL OSC.)
TC5	A2 COMPARTMENT AMBIENT AIR (A2 COMPONENTS)	TC17	A3-U3 CASE (ECL INTEGRATED CKT; COUNTER)
TC6	A4-U4 CASE (RF HYBRID, AMPLIFIER)	TC18	A4-U7 CASE (RF HYBRID, LIMITER AMP)
TC7	A4-U11 CASE (LINEAR,COMPARITOR)	TC19	A4-U6 CASE (RF HYBRID, LIMITER AMP)

NOTES:
A2=SYNTHESIZER 1; A3=SYNTHESIZER 2; A4=DUAL DETECTOR OF DETECTOR 1 (LEFT) & DETECTOR 2 (RIGHT).
TC11 THRU TC15 WERE NOT USED.

031

Test Data Cont'd: Date: 12-16-91

SECOND SERIES
OF TESTS FOR 5/0 THRU 10/0
STEP-LEVEL'S

1000hrs - Setting-up Chmbr in [redacted] Lab

1200hrs - Setting-up TC's in chamber/UUT
Chn's 1-10, 16-19 will be used per earlier tests

1900hrs: Set chmbr to +61°C (4/0) Cond's
UUT "OFF". STILL TRYING TO GET
HP85 TO WORK

1430hrs: Chmber will remain @ +61°C Soak
until data logger problem is resolved.

12-17-91

0730hrs: Chmbr & UUT @ 61°C. Trying to re-solve
software/hardware problems w/
data logger/HP85
Note: Software keeps locking-up
on "Page 3" <RUN> Notified
Supervisor J. DeBellis

0930hrs - J. DeBellis arrives to help solve problem.
Result → A "Cantor" Card had loosened

Data Recorder: BA

Page 10

032

TEST NO. 2 EQUIPMENT
(DAY 4 - DAY)

1) THERMOTRON CHMBR
H-807567 9-2-92

2) HP 85 COMPUTER
H428110

3) HP 3497A DATA
ACQUISITION UNIT
H428499 7/29/93

4) HP 7470A PLOTTER
H512478

5) HP THINK JET PRINTER
HA51399

6) HP 6299A PS UUT H357054

Test Data Cont'd: Date: 12-17-91

inside data logger causing the "time" problems.
The condition was rectified.

1000hrs: Program re-loaded & runs except a minor anomaly occurs every 1 min. An error flag audibilizes, but does not influence to the thermal data.

1015hrs: Temp. set for 93°C to re-establish Temp level & data. Goal is 4/0 cond's. DC Pwr off until temps stabilize.
Channels plotted are:
TC1-TC5, TC7, TC9, TC10, TC17

1059: Product Saver High-Temp Alarm tripped - Re-set Product Saver "appears" to be set @ 100°C (Chmbr) May need to re-set

1105hrs: Turned on unit Power, however datalogger / Programme appears to have stopped

1110hrs: Turned UUT off. The alarm surge knocked Datalogger off the air. Will need to re-load.

1120hrs: Started New Program. Ran Datalogger Pwr Strip to a new AC outlet NOT in Vicinity of Chmbr. Will try to raise Alarm S.P.

1130hrs: Reset Product Saver alarm to 160°C
Re plotting using 80,200 instead of 20,140

Data Recorder: BA

Test Data Cont'd: Date: 12-17-91

1154hrs: New plot program successfully started 80°C-200°C, UUT still off. TC's ≈ 91°C
Chmbr Set point @ 93°C
TC's Plotted: TC1-TC5, TC7, 9, 10, 17

1200hrs: UUT Pwr-on. Voltage level "0"
Ti ≈ 91°C

1236hrs: Opened Chamber door to tighten a chassis screw

1244hrs: Re-Plotting

1300hrs: Re-Plotting. Chassis temp. slowly increasing due to tightening. Other TC's also increasing slowly.
TC17 NOT PLOTTED

1334 hrs: Re-Plotting (20,140 scale). Begin dwell at Level 4/0 (93°C Chamber, Nom Voltage). UUT ON since 12:00. [signature] 92466 BEGINS DAY 4

1434 hrs: Ramp to Level 5/0 (101°C chamber, Nom Voltage). Allow to stabilize 30 min and dwell 1-hour. [signature] 92466
(Dwell was 70 minutes).

1614 hrs: Ramp to Level 6/0 (109°C Chamber, Nom. Voltage). [initials]

TC10 = A3Q6

17:04 hrs: To 17:14 hrs set synth's to single freq. rather than ~~...~~ hopping. Affects were observed at TC8 - flange and ~~...~~. Both showed decreased thermal readings. Resume hopping. [initials]

17:46, 17:50, 17:54 hrs: Data Plotted, But no printout since printer ate paper. 17:58 hrs next printout. [initials]

Data Recorder:

033

Test Data Cont'd: Date: 12-17-91

18:02 HRS: END Dwell and Ramp to Level 7/0 (+117°C Chamber, Nominal Voltages). [signature] 92466

19:28 HRS: Note that TC1 = Flange temp is decreasing toward of TC2 = UUT air temperature. Semi-rigid coaxial cables leading to exterior of chamber, may be pulling some heat away from UUT chassis via cable & connector interface. [signature]. Chamber window also warm.

19:34 HRS: Ramp to Level 8/0 (+125°C Chamber SET, Nom. Voltage ±5.00/±15.00 always) [signature]

20:06 HRS: TC1 = flange dropping off sharply. TC2 = UUT air and other thermocouples show no decrease. TC1 is not functioning properly. UUT still operating with degraded performance. [signature]

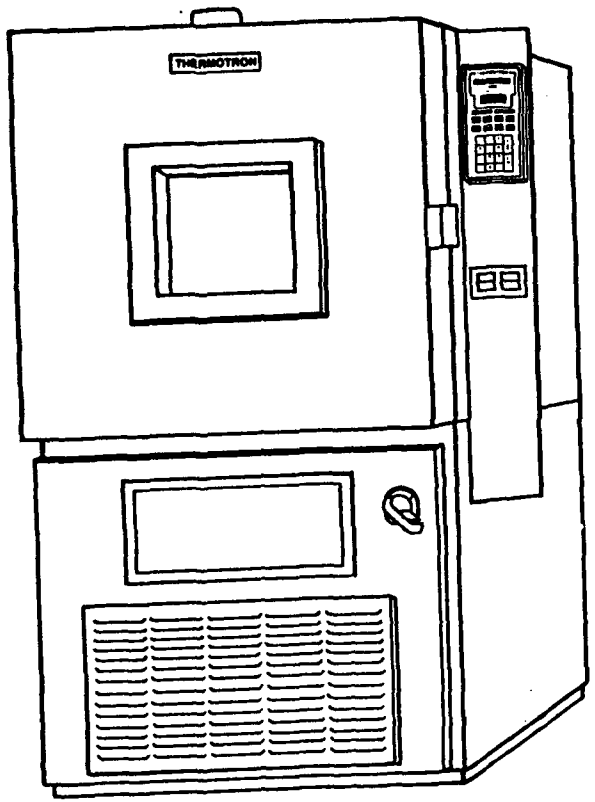
20:26 HRS: Wiggle Semi-rigid Coaxes & TC1 = flange came back. Lost the 20:26 Data Printout due to paper jam. Plot is okay. (Printout for TC1, TC2, TC3 & TC4 only). [signature]

20:34 HRS: TC1 = flange temperature shot up dramatically; appr ox 4°C greater than it was prior to 20:06 HRS. Question reliability of flange data for Levels 6/0, 7/0 and 8/0 will need analysis & comparison to prior DAYS runs. (TC1 = flange was giving us problems earlier in day, during setup. See Log of 12:36 HRS 12-17-91). [signature]

21:30 HRS: Turn UUT OFF, Lower chamber temperature back to room temperature. END DAY 4 TEST [signature] 92466

Data Recorder: _____

TEMPERATURE CHAMBER MODELS S4, S8, S16, and S32



Models S4, S8, S16, and S32 are designed to test temperature tolerances. Model S4 has four cubic feet of work space. Model S8 has eight cubic feet of work space. Model S16 has 16 cubic feet of work space. Model S32 has 32 cubic feet of work space.

These chambers can be equipped with various options. See the Option Sheet in the front of the manual to know which options your chamber has.

SPECIFICATIONS

	S4	S8
VOLTAGE ±10%	230/1/60 or 230/3/60	230/1/60 or 230/3/60
RECOMMENDED MINIMUM SERVICE AMPERES	1 phase 40 amperes 3 phase 30 amperes	1 phase 40 amperes 3 phase 30 amperes
TEMPERATURE RANGE	-100°F to +350°F -73°C to +177°C	-90°F to +350°F -68°C to +177°C
TOLERANCE AT CONTROLLER THERMOCOUPLE WHEN THE CHAMBER IS STABLE	±2°F ±1.1°C	±2°F ±1.1°C
TEMPERATURE PULLDOWN FROM +75°F (+24°C)		
-40°F (-40°C)	25 minutes	25 minutes
-65°F (-54°C)	30 minutes	40 minutes
-90°F (-68°C)	—	60 minutes
-100°F (-73°C)	50 minutes	—
TEMPERATURE HEAT UP FROM +75°F (+24°C)		
+240°F (+116°C)	15 minutes	20 minutes
+350°F (+177°C)	25 minutes	30 minutes
CAPACITY FOR HOLDING WATTS LIVE LOAD		
0°F (-18°C)	600 watts	550 watts
-40°F (-40°C)	400 watts	350 watts
-65°F (-54°C)	300 watts	200 watts

The above specifications are based on 60 hertz operation and +27°C (+80°F) ambient air. For 50 hertz operation, refrigeration and air flow performance are approximately 17% less. Accessories can reduce chamber performance.

Measured chmbr vol = $\frac{20in \times 20in \times 20in}{1728 in^3/ft^3} \approx 4.6 ft^3$

SECTION 3

Thermal Survey
Data Printouts and Plots
prepared by B. J. Armstrong

EXP @1--SCAN @05--11:25:19:01:25
[redacted] Thermal Survey/Mueler"

ch: @1	22.1	deg_C
ch: @2	22.3	deg_C
ch: @3	22.4	deg_C
ch: @4	22.4	deg_C
ch: @5	22.2	deg_C
ch: @6	22.2	deg_C
ch: @7	22.4	deg_C
ch: @8	22.2	deg_C
ch: @9	22.3	deg_C
ch: 10	22.2	deg_C
ch: 11	22.3	deg_C
ch: 12	22.2	deg_C
ch: 13	22.4	deg_C
ch: 14	22.4	deg_C
ch: 15	22.3	deg_C
ch: 16	23.1	deg_C
ch: 17	23.0	deg_C
ch: 18	22.8	deg_C
ch: 19	23.1	deg_C

EXP @1--SCAN @10--11:25:19:06:26
[redacted] Thermal Survey/Mueler"

ch: @1	22.1	deg_C
ch: @2	22.2	deg_C
ch: @3	22.2	deg_C
ch: @4	22.4	deg_C
ch: @5	22.0	deg_C
ch: @6	22.1	deg_C
ch: @7	22.4	deg_C
ch: @8	22.1	deg_C
ch: @9	22.3	deg_C
ch: 10	22.1	deg_C
ch: 11	22.3	deg_C
ch: 12	22.3	deg_C
ch: 13	22.4	deg_C
ch: 14	22.4	deg_C
ch: 15	22.3	deg_C
ch: 16	24.2	deg_C
ch: 17	24.1	deg_C
ch: 18	24.9	deg_C
ch: 19	23.6	deg_C

EXP @1--SCAN @15--11:25:19:21:
[redacted] Thermal Survey/Mueler"

ch: @1	22.3	deg_C
ch: @2	24.7	deg_C
ch: @3	22.5	deg_C
ch: @4	22.5	deg_C
ch: @5	22.2	deg_C
ch: @6	22.3	deg_C
ch: @7	22.4	deg_C
ch: @8	22.3	deg_C
ch: @9	22.5	deg_C
ch: 10	23.7	deg_C
ch: 11	22.7	deg_C
ch: 12	22.9	deg_C
ch: 13	22.2	deg_C
ch: 14	22.4	deg_C
ch: 15	22.4	deg_C
ch: 16	25.9	deg_C
ch: 17	25.0	deg_C
ch: 18	26.4	deg_C
ch: 19	26.7	deg_C

EXP @1--SCAN @70--11:25:19:56:25
[redacted] Thermal Survey/Mueler"

ch: @1	22.0	deg_C
ch: @2	22.2	deg_C
ch: @3	22.4	deg_C
ch: @4	22.4	deg_C
ch: @5	22.1	deg_C
ch: @6	22.1	deg_C
ch: @7	22.4	deg_C
ch: @8	22.2	deg_C
ch: @9	22.3	deg_C
ch: 10	22.1	deg_C
ch: 11	22.2	deg_C
ch: 12	22.2	deg_C
ch: 13	22.5	deg_C
ch: 14	22.4	deg_C
ch: 15	22.3	deg_C
ch: 16	23.2	deg_C
ch: 17	32.7	deg_C
ch: 18	23.0	deg_C
ch: 19	23.2	deg_C

EXP @1--SCAN @75--11:25:19:01:26
[redacted] Thermal Survey/Mueler"

ch: @1	21.9	deg_C
ch: @2	22.1	deg_C
ch: @3	22.3	deg_C
ch: @4	22.5	deg_C
ch: @5	22.0	deg_C
ch: @6	22.1	deg_C
ch: @7	22.4	deg_C
ch: @8	22.1	deg_C
ch: @9	22.2	deg_C
ch: 10	22.0	deg_C
ch: 11	22.2	deg_C
ch: 12	22.2	deg_C
ch: 13	22.5	deg_C
ch: 14	22.4	deg_C
ch: 15	22.3	deg_C
ch: 16	24.2	deg_C
ch: 17	29.1	deg_C
ch: 18	29.1	deg_C
ch: 19	23.6	deg_C

EXP @1--SCAN @80--11:25:19:11:26
[redacted] Thermal Survey/Mueler"

ch: @1	22.1	deg_C
ch: @2	22.3	deg_C
ch: @3	22.2	deg_C
ch: @4	22.4	deg_C
ch: @5	22.1	deg_C
ch: @6	22.2	deg_C
ch: @7	22.4	deg_C
ch: @8	22.1	deg_C
ch: @9	22.3	deg_C
ch: 10	22.1	deg_C
ch: 11	22.3	deg_C
ch: 12	22.2	deg_C
ch: 13	22.5	deg_C
ch: 14	22.4	deg_C
ch: 15	22.3	deg_C
ch: 16	24.7	deg_C
ch: 17	24.9	deg_C
ch: 18	26.3	deg_C
ch: 19	25.3	deg_C

EXP @1--SCAN @85--11:25:19:16:25
[redacted] Thermal Survey/Mueler"

ch: @1	22.1	deg_C
ch: @2	22.4	deg_C
ch: @3	22.3	deg_C
ch: @4	22.5	deg_C
ch: @5	22.1	deg_C
ch: @6	22.2	deg_C
ch: @7	22.5	deg_C
ch: @8	22.2	deg_C
ch: @9	22.4	deg_C
ch: 10	22.2	deg_C
ch: 11	22.4	deg_C
ch: 12	22.4	deg_C
ch: 13	22.6	deg_C
ch: 14	22.5	deg_C
ch: 15	22.4	deg_C
ch: 16	24.8	deg_C
ch: 17	24.9	deg_C
ch: 18	24.9	deg_C
ch: 19	25.0	deg_C

EXP @1--SCAN @90--11:25:19:26:26
[redacted] Thermal Survey/Mueler"

ch: @1	22.1	deg_C
ch: @2	25.2	deg_C
ch: @3	25.1	deg_C
ch: @4	22.3	deg_C
ch: @5	22.2	deg_C
ch: @6	22.6	deg_C
ch: @7	22.6	deg_C
ch: @8	22.7	deg_C
ch: @9	22.6	deg_C
ch: 10	23.0	deg_C
ch: 11	22.4	deg_C
ch: 12	22.2	deg_C
ch: 13	22.2	deg_C
ch: 14	22.5	deg_C
ch: 15	23.4	deg_C
ch: 16	25.6	deg_C
ch: 17	25.8	deg_C
ch: 18	25.1	deg_C
ch: 19	25.2	deg_C

EXP @1--SCAN @95--11:25:19:31:
[redacted] Thermal Survey/Mueler"

ch: @1	24.7	deg_C
ch: @2	25.0	deg_C
ch: @3	25.9	deg_C
ch: @4	27.4	deg_C
ch: @5	22.2	deg_C
ch: @6	22.4	deg_C
ch: @7	22.4	deg_C
ch: @8	22.3	deg_C
ch: @9	22.6	deg_C
ch: 10	22.4	deg_C
ch: 11	22.5	deg_C
ch: 12	23.0	deg_C
ch: 13	22.4	deg_C
ch: 14	22.4	deg_C
ch: 15	22.6	deg_C
ch: 16	25.9	deg_C
ch: 17	26.1	deg_C
ch: 18	26.3	deg_C
ch: 19	26.6	deg_C

EXP 01--SCAN 110--11·25·19·36·25
[redacted] Thermal Survey/Mueller"

ch· 01	25.9	deg_C
ch· 02	24.8	deg_C
ch· 03	26.0	deg_C
ch· 04	27.4	deg_C
ch· 05	22.4	deg_C
ch· 06	22.9	deg_C
ch· 07	22.9	deg_C
ch· 08	22.7	deg_C
ch· 09	23.6	deg_C
ch· 10	23.3	deg_C
ch· 11	23.0	deg_C
ch· 12	22.8	deg_C
ch· 13	22.6	deg_C
ch· 14	22.7	deg_C
ch· 15	22.8	deg_C
ch· 16	26.1	deg_C
ch· 17	26.2	deg_C
ch· 18	26.4	deg_C
ch· 19	26.7	deg_C

EXP 01--SCAN 115--11·25·19·41·26
[redacted] Thermal Survey/Mueller"

ch· 01	25.9	deg_C
ch· 02	25.9	deg_C
ch· 03	25.9	deg_C
ch· 04	28.3	deg_C
ch· 05	22.4	deg_C
ch· 06	22.4	deg_C
ch· 07	31.5	deg_C
ch· 08	22.4	deg_C
ch· 09	22.8	deg_C
ch· 10	22.8	deg_C
ch· 11	22.3	deg_C
ch· 12	22.6	deg_C
ch· 13	22.6	deg_C
ch· 14	22.7	deg_C
ch· 15	22.6	deg_C
ch· 16	26.4	deg_C
ch· 17	26.5	deg_C
ch· 18	26.9	deg_C
ch· 19	27.1	deg_C

EXP 01--SCAN 120--11·25·19·46·26
[redacted] Thermal Survey/Mueller"

ch· 01	26.4	deg_C
ch· 02	25.2	deg_C
ch· 03	25.5	deg_C
ch· 04	27.8	deg_C
ch· 05	22.4	deg_C
ch· 06	22.4	deg_C
ch· 07	26.9	deg_C
ch· 08	22.3	deg_C
ch· 09	22.5	deg_C
ch· 10	23.3	deg_C
ch· 11	22.4	deg_C
ch· 12	22.3	deg_C
ch· 13	22.3	deg_C
ch· 14	22.4	deg_C
ch· 15	22.4	deg_C
ch· 16	26.5	deg_C
ch· 17	26.7	deg_C
ch· 18	26.5	deg_C
ch· 19	27.1	deg_C

EXP 01--SCAN 125--11·25·19·51·26
[redacted] Thermal Survey/Mueller"

ch· 01	27.4	deg_C
ch· 02	26.7	deg_C
ch· 03	27.3	deg_C
ch· 04	28.7	deg_C
ch· 05	22.4	deg_C
ch· 06	22.2	deg_C
ch· 07	28.0	deg_C
ch· 08	22.4	deg_C
ch· 09	22.7	deg_C
ch· 10	29.1	deg_C
ch· 11	22.4	deg_C
ch· 12	22.3	deg_C
ch· 13	22.6	deg_C
ch· 14	22.5	deg_C
ch· 15	22.4	deg_C
ch· 16	27.0	deg_C
ch· 17	27.2	deg_C
ch· 18	27.5	deg_C
ch· 19	27.5	deg_C

EXP 01--SCAN 130--11·25·19·56·26
[redacted] Thermal Survey/Mueller"

ch· 01	26.5	deg_C
ch· 02	25.2	deg_C
ch· 03	26.5	deg_C
ch· 04	28.4	deg_C
ch· 05	22.2	deg_C
ch· 06	22.3	deg_C
ch· 07	28.1	deg_C
ch· 08	24.2	deg_C
ch· 09	22.8	deg_C
ch· 10	25.6	deg_C
ch· 11	22.4	deg_C
ch· 12	22.3	deg_C
ch· 13	22.5	deg_C
ch· 14	23.2	deg_C
ch· 15	22.5	deg_C
ch· 16	27.0	deg_C
ch· 17	27.2	deg_C
ch· 18	27.5	deg_C
ch· 19	27.7	deg_C

EXP 01--SCAN 135--11·25·20·01·26
[redacted] Thermal Survey/Mueller"

ch· 01	27.2	deg_C
ch· 02	26.2	deg_C
ch· 03	27.4	deg_C
ch· 04	28.7	deg_C
ch· 05	22.2	deg_C
ch· 06	22.1	deg_C
ch· 07	28.3	deg_C
ch· 08	28.0	deg_C
ch· 09	22.7	deg_C
ch· 10	28.5	deg_C
ch· 11	22.4	deg_C
ch· 12	22.3	deg_C
ch· 13	22.4	deg_C
ch· 14	23.0	deg_C
ch· 15	22.6	deg_C
ch· 16	27.3	deg_C
ch· 17	27.5	deg_C
ch· 18	27.9	deg_C
ch· 19	28.0	deg_C

EXP 01--SCAN 140--11·25·20·06·2
[redacted] Thermal Survey/Mueller"

ch· 01	25.7	deg_C
ch· 02	25.0	deg_C
ch· 03	27.0	deg_C
ch· 04	28.2	deg_C
ch· 05	22.5	deg_C
ch· 06	46.3	deg_C
ch· 07	27.9	deg_C
ch· 08	27.6	deg_C
ch· 09	22.9	deg_C
ch· 10	28.4	deg_C
ch· 11	22.4	deg_C
ch· 12	22.5	deg_C
ch· 13	22.4	deg_C
ch· 14	22.9	deg_C
ch· 15	23.9	deg_C
ch· 16	27.2	deg_C
ch· 17	27.2	deg_C
ch· 18	27.5	deg_C
ch· 19	27.9	deg_C

EXP 01--SCAN 145--11·25·20·11·2
[redacted] Thermal Survey/Mueller"

ch· 01	27.5	deg_C
ch· 02	27.3	deg_C
ch· 03	27.4	deg_C
ch· 04	28.9	deg_C
ch· 05	32.3	deg_C
ch· 06	42.5	deg_C
ch· 07	27.9	deg_C
ch· 08	28.6	deg_C
ch· 09	22.1	deg_C
ch· 10	27.7	deg_C
ch· 11	22.3	deg_C
ch· 12	22.2	deg_C
ch· 13	22.5	deg_C
ch· 14	23.0	deg_C
ch· 15	23.1	deg_C
ch· 16	27.2	deg_C
ch· 17	27.2	deg_C
ch· 18	27.9	deg_C
ch· 19	27.9	deg_C

EXP 01--SCAN 150--11·25·20·16·2
[redacted] Thermal Survey/Mueller"

ch· 01	27.1	deg_C
ch· 02	25.2	deg_C
ch· 03	25.7	deg_C
ch· 04	28.3	deg_C
ch· 05	29.5	deg_C
ch· 06	33.0	deg_C
ch· 07	27.6	deg_C
ch· 08	27.7	deg_C
ch· 09	22.1	deg_C
ch· 10	27.3	deg_C
ch· 11	22.3	deg_C
ch· 12	22.3	deg_C
ch· 13	23.0	deg_C
ch· 14	23.1	deg_C
ch· 15	22.9	deg_C
ch· 16	27.0	deg_C
ch· 17	27.1	deg_C
ch· 18	27.5	deg_C
ch· 19	27.7	deg_C

EXP 01--SCAN 155--11:25:20:21:25
[redacted] Thermal Survey/Mueler"

ch: 01	28.3	deg_C
ch: 02	29.5	deg_C
ch: 03	27.4	deg_C
ch: 04	29.9	deg_C
ch: 05	30.0	deg_C
ch: 06	31.0	deg_C
ch: 07	28.0	deg_C
ch: 08	27.9	deg_C
ch: 09	22.1	deg_C
ch: 10	27.8	deg_C
ch: 11	22.4	deg_C
ch: 12	22.3	deg_C
ch: 13	23.0	deg_C
ch: 14	23.1	deg_C
ch: 15	23.4	deg_C
ch: 16	27.3	deg_C
ch: 17	27.5	deg_C
ch: 18	27.9	deg_C
ch: 19	28.2	deg_C

EXP 01--SCAN 170--11:25:20:35:26
[redacted] Thermal Survey/Mueler"

ch: 01	27.1	deg_C
ch: 02	26.0	deg_C
ch: 03	26.7	deg_C
ch: 04	28.6	deg_C
ch: 05	25.3	deg_C
ch: 06	28.9	deg_C
ch: 07	27.9	deg_C
ch: 08	27.7	deg_C
ch: 09	30.5	deg_C
ch: 10	27.5	deg_C
ch: 11	22.3	deg_C
ch: 12	22.2	deg_C
ch: 13	22.9	deg_C
ch: 14	22.9	deg_C
ch: 15	23.2	deg_C
ch: 16	27.1	deg_C
ch: 17	27.2	deg_C
ch: 18	27.7	deg_C
ch: 19	28.0	deg_C

EXP 01--SCAN 185--11:25:20:51
[redacted] Thermal Survey/Mueler"

ch: 01	27.4	deg_C
ch: 02	25.5	deg_C
ch: 03	25.6	deg_C
ch: 04	27.9	deg_C
ch: 05	28.0	deg_C
ch: 06	28.2	deg_C
ch: 07	27.5	deg_C
ch: 08	27.4	deg_C
ch: 09	28.0	deg_C
ch: 10	27.3	deg_C
ch: 11	22.0	deg_C
ch: 12	22.0	deg_C
ch: 13	22.1	deg_C
ch: 14	22.3	deg_C
ch: 15	23.9	deg_C
ch: 16	27.8	deg_C
ch: 17	27.1	deg_C
ch: 18	27.4	deg_C
ch: 19	27.6	deg_C

EXP 01--SCAN 150--11:25:20:26:25
[redacted] Thermal Survey/Mueler"

ch: 01	28.5	deg_C
ch: 02	29.0	deg_C
ch: 03	27.5	deg_C
ch: 04	28.9	deg_C
ch: 05	32.6	deg_C
ch: 06	29.3	deg_C
ch: 07	28.0	deg_C
ch: 08	29.0	deg_C
ch: 09	33.7	deg_C
ch: 10	27.9	deg_C
ch: 11	22.4	deg_C
ch: 12	22.2	deg_C
ch: 13	22.9	deg_C
ch: 14	22.9	deg_C
ch: 15	23.0	deg_C
ch: 16	27.5	deg_C
ch: 17	27.6	deg_C
ch: 18	29.1	deg_C
ch: 19	28.3	deg_C

EXP 01--SCAN 175--11:25:20:41:26
[redacted] Thermal Survey/Mueler"

ch: 01	27.9	deg_C
ch: 02	26.9	deg_C
ch: 03	27.1	deg_C
ch: 04	28.7	deg_C
ch: 05	31.6	deg_C
ch: 06	29.0	deg_C
ch: 07	27.9	deg_C
ch: 08	27.9	deg_C
ch: 09	29.5	deg_C
ch: 10	27.6	deg_C
ch: 11	22.4	deg_C
ch: 12	22.1	deg_C
ch: 13	22.7	deg_C
ch: 14	23.0	deg_C
ch: 15	23.0	deg_C
ch: 16	27.3	deg_C
ch: 17	27.4	deg_C
ch: 18	27.9	deg_C
ch: 19	28.0	deg_C

EXP 01--SCAN 190--11:25:20:56
[redacted] Thermal Survey/Mueler"

ch: 01	27.1	deg_C
ch: 02	25.5	deg_C
ch: 03	27.5	deg_C
ch: 04	28.5	deg_C
ch: 05	29.3	deg_C
ch: 06	30.4	deg_C
ch: 07	34.1	deg_C
ch: 08	34.1	deg_C
ch: 09	31.0	deg_C
ch: 10	30.0	deg_C
ch: 11	22.2	deg_C
ch: 12	22.2	deg_C
ch: 13	22.2	deg_C
ch: 14	22.3	deg_C
ch: 15	24.0	deg_C
ch: 16	33.4	deg_C
ch: 17	37.1	deg_C
ch: 18	28.0	deg_C
ch: 19	29.1	deg_C

21:00 TURN ON UUT PWR TO CHECK STATION SETUP

EXP 01--SCAN 165--11:25:20:31:26
[redacted] Thermal Survey/Mueler"

ch: 01	28.5	deg_C
ch: 02	29.4	deg_C
ch: 03	27.8	deg_C
ch: 04	29.2	deg_C
ch: 05	29.2	deg_C
ch: 06	29.4	deg_C
ch: 07	28.1	deg_C
ch: 08	29.1	deg_C
ch: 09	29.5	deg_C
ch: 10	27.9	deg_C
ch: 11	22.3	deg_C
ch: 12	22.2	deg_C
ch: 13	22.9	deg_C
ch: 14	23.0	deg_C
ch: 15	23.4	deg_C
ch: 16	27.5	deg_C
ch: 17	27.8	deg_C
ch: 18	29.1	deg_C
ch: 19	28.3	deg_C

EXP 01--SCAN 180--11:25:20:46:26
[redacted] Thermal Survey/Mueler"

ch: 01	27.7	deg_C
ch: 02	27.0	deg_C
ch: 03	27.3	deg_C
ch: 04	28.7	deg_C
ch: 05	28.4	deg_C
ch: 06	28.9	deg_C
ch: 07	27.8	deg_C
ch: 08	27.7	deg_C
ch: 09	28.4	deg_C
ch: 10	27.7	deg_C
ch: 11	22.4	deg_C
ch: 12	22.2	deg_C
ch: 13	22.7	deg_C
ch: 14	22.8	deg_C
ch: 15	23.1	deg_C
ch: 16	27.3	deg_C
ch: 17	27.4	deg_C
ch: 18	27.7	deg_C
ch: 19	28.0	deg_C

EXP 01--SCAN 195--11:25:21:01
[redacted] Thermal Survey/Mueler"

ch: 01	26.2	deg_C
ch: 02	24.3	deg_C
ch: 03	30.1	deg_C
ch: 04	31.5	deg_C
ch: 05	31.7	deg_C
ch: 06	34.6	deg_C
ch: 07	40.4	deg_C
ch: 08	39.5	deg_C
ch: 09	39.1	deg_C
ch: 10	35.3	deg_C
ch: 11	21.8	deg_C
ch: 12	21.9	deg_C
ch: 13	21.9	deg_C
ch: 14	22.2	deg_C
ch: 15	24.3	deg_C
ch: 16	41.3	deg_C
ch: 17	44.2	deg_C
ch: 18	35.6	deg_C
ch: 19	33.3	deg_C

EXP 01--SCAN 200--11:25:21:05:25
[redacted] Thermal Survey/Mueller"

ch: 01	26.2	deg_C
ch: 02	24.3	deg_C
ch: 03	31.4	deg_C
ch: 04	34.1	deg_C
ch: 05	33.2	deg_C
ch: 06	37.6	deg_C
ch: 07	43.3	deg_C
ch: 08	42.6	deg_C
ch: 09	40.5	deg_C
ch: 10	38.1	deg_C
ch: 11	22.0	deg_C
ch: 12	22.0	deg_C
ch: 13	22.0	deg_C
ch: 14	22.3	deg_C
ch: 15	24.1	deg_C
ch: 16	44.7	deg_C
ch: 17	47.5	deg_C
ch: 18	38.9	deg_C
ch: 19	35.6	deg_C

EXP 01--SCAN 205--11:25:21:11:25
[redacted] Thermal Survey/Mueller"

ch: 01	25.9	deg_C
ch: 02	24.0	deg_C
ch: 03	32.2	deg_C
ch: 04	34.9	deg_C
ch: 05	34.4	deg_C
ch: 06	39.1	deg_C
ch: 07	45.2	deg_C
ch: 08	44.5	deg_C
ch: 09	42.5	deg_C
ch: 10	40.1	deg_C
ch: 11	21.9	deg_C
ch: 12	21.9	deg_C
ch: 13	21.9	deg_C
ch: 14	22.3	deg_C
ch: 15	24.1	deg_C
ch: 16	45.0	deg_C
ch: 17	49.0	deg_C
ch: 18	40.7	deg_C
ch: 19	39.4	deg_C

EXP 01--SCAN 210--11:25:21:15:25
[redacted] Thermal Survey/Mueller"

ch: 01	26.2	deg_C
ch: 02	25.8	deg_C
ch: 03	32.7	deg_C
ch: 04	35.2	deg_C
ch: 05	35.5	deg_C
ch: 06	39.9	deg_C
ch: 07	45.2	deg_C
ch: 08	45.7	deg_C
ch: 09	43.6	deg_C
ch: 10	40.9	deg_C
ch: 11	21.9	deg_C
ch: 12	21.9	deg_C
ch: 13	22.0	deg_C
ch: 14	22.3	deg_C
ch: 15	24.9	deg_C
ch: 16	47.8	deg_C
ch: 17	50.5	deg_C
ch: 18	42.1	deg_C
ch: 19	39.7	deg_C

EXP 01--SCAN 215--11:25:21:21:25
[redacted] Thermal Survey/Mueller"

ch: 01	25.6	deg_C
ch: 02	24.5	deg_C
ch: 03	32.5	deg_C
ch: 04	35.8	deg_C
ch: 05	35.2	deg_C
ch: 06	40.4	deg_C
ch: 07	46.9	deg_C
ch: 08	46.4	deg_C
ch: 09	44.4	deg_C
ch: 10	41.8	deg_C
ch: 11	21.8	deg_C
ch: 12	21.8	deg_C
ch: 13	21.9	deg_C
ch: 14	22.3	deg_C
ch: 15	24.5	deg_C
ch: 16	47.8	deg_C
ch: 17	51.0	deg_C
ch: 18	42.7	deg_C
ch: 19	40.5	deg_C

EXP 01--SCAN 220--11:25:21:26:25
[redacted] Thermal Survey/Mueller"

ch: 01	25.3	deg_C
ch: 02	24.2	deg_C
ch: 03	31.4	deg_C
ch: 04	34.8	deg_C
ch: 05	33.2	deg_C
ch: 06	37.6	deg_C
ch: 07	42.2	deg_C
ch: 08	42.4	deg_C
ch: 09	40.7	deg_C
ch: 10	38.6	deg_C
ch: 11	22.0	deg_C
ch: 12	22.0	deg_C
ch: 13	22.1	deg_C
ch: 14	22.4	deg_C
ch: 15	24.7	deg_C
ch: 16	42.4	deg_C
ch: 17	45.3	deg_C
ch: 18	39.7	deg_C
ch: 19	38.7	deg_C

EXP 01--SCAN 225--11:25:21:31:25
[redacted] Thermal Survey/Mueller"

ch: 01	25.1	deg_C
ch: 02	23.7	deg_C
ch: 03	32.6	deg_C
ch: 04	35.2	deg_C
ch: 05	34.4	deg_C
ch: 06	39.4	deg_C
ch: 07	45.6	deg_C
ch: 08	45.3	deg_C
ch: 09	43.0	deg_C
ch: 10	40.9	deg_C
ch: 11	22.1	deg_C
ch: 12	22.1	deg_C
ch: 13	22.1	deg_C
ch: 14	22.4	deg_C
ch: 15	25.0	deg_C
ch: 16	46.6	deg_C
ch: 17	49.9	deg_C
ch: 18	41.3	deg_C
ch: 19	39.3	deg_C

EXP 01--SCAN 230--11:25:21:35:
[redacted] Thermal Survey/Mueller"

ch: 01	25.0	deg_C
ch: 02	23.5	deg_C
ch: 03	32.7	deg_C
ch: 04	35.9	deg_C
ch: 05	34.9	deg_C
ch: 06	39.7	deg_C
ch: 07	46.5	deg_C
ch: 08	45.2	deg_C
ch: 09	43.9	deg_C
ch: 10	41.1	deg_C
ch: 11	22.0	deg_C
ch: 12	21.9	deg_C
ch: 13	22.1	deg_C
ch: 14	22.5	deg_C
ch: 15	24.7	deg_C
ch: 16	47.4	deg_C
ch: 17	50.6	deg_C
ch: 18	42.3	deg_C
ch: 19	39.9	deg_C

EXP 01--SCAN 235--11:25:21:41:
[redacted] Thermal Survey/Mueller"

ch: 01	24.6	deg_C
ch: 02	23.4	deg_C
ch: 03	41.9	deg_C
ch: 04	41.4	deg_C
ch: 05	41.4	deg_C
ch: 06	41.9	deg_C
ch: 07	50.9	deg_C
ch: 08	50.4	deg_C
ch: 09	47.7	deg_C
ch: 10	46.3	deg_C
ch: 11	22.1	deg_C
ch: 12	22.1	deg_C
ch: 13	22.1	deg_C
ch: 14	22.4	deg_C
ch: 15	25.0	deg_C
ch: 16	52.0	deg_C
ch: 17	55.0	deg_C
ch: 18	46.3	deg_C
ch: 19	43.2	deg_C

EXP 01--SCAN 240--11:25:21:46:
[redacted] Thermal Survey/Mueller"

ch: 01	24.5	deg_C
ch: 02	23.7	deg_C
ch: 03	44.3	deg_C
ch: 04	43.8	deg_C
ch: 05	43.7	deg_C
ch: 06	44.1	deg_C
ch: 07	53.2	deg_C
ch: 08	52.8	deg_C
ch: 09	50.1	deg_C
ch: 10	48.7	deg_C
ch: 11	22.0	deg_C
ch: 12	21.9	deg_C
ch: 13	22.0	deg_C
ch: 14	22.4	deg_C
ch: 15	25.2	deg_C
ch: 16	54.4	deg_C
ch: 17	57.2	deg_C
ch: 18	48.7	deg_C
ch: 19	45.4	deg_C

EXP 01--SCAN 245--11:25:21:51:25
[redacted] Thermal Survey/Mueller"

ch: 01	24.5	deg_C
ch: 02	23.4	deg_C
ch: 03	45.7	deg_C
ch: 04	45.4	deg_C
ch: 05	45.2	deg_C
ch: 06	45.5	deg_C
ch: 07	54.8	deg_C
ch: 08	54.4	deg_C
ch: 09	51.9	deg_C
ch: 10	50.3	deg_C
ch: 11	22.0	deg_C
ch: 12	21.9	deg_C
ch: 13	22.0	deg_C
ch: 14	22.3	deg_C
ch: 15	25.1	deg_C
ch: 16	55.9	deg_C
ch: 17	58.7	deg_C
ch: 18	58.4	deg_C
ch: 19	47.9	deg_C

EXP 01--SCAN 250--11:25:22:06:25
[redacted] Thermal Survey/Mueller"

ch: 01	24.4	deg_C
ch: 02	24.2	deg_C
ch: 03	48.2	deg_C
ch: 04	48.0	deg_C
ch: 05	47.4	deg_C
ch: 06	47.9	deg_C
ch: 07	57.5	deg_C
ch: 08	57.3	deg_C
ch: 09	54.5	deg_C
ch: 10	53.0	deg_C
ch: 11	22.3	deg_C
ch: 12	22.3	deg_C
ch: 13	22.3	deg_C
ch: 14	22.5	deg_C
ch: 15	24.1	deg_C
ch: 16	58.6	deg_C
ch: 17	61.4	deg_C
ch: 18	53.2	deg_C
ch: 19	49.9	deg_C

EXP 01--SCAN 275--11:25:22:21:25
[redacted] Thermal Survey/Mueller"

ch: 01	38.7	deg_C
ch: 02	38.0	deg_C
ch: 03	43.1	deg_C
ch: 04	42.6	deg_C
ch: 05	36.9	deg_C
ch: 06	42.3	deg_C
ch: 07	47.6	deg_C
ch: 08	48.5	deg_C
ch: 09	48.1	deg_C
ch: 10	48.5	deg_C
ch: 11	22.5	deg_C
ch: 12	22.6	deg_C
ch: 13	22.7	deg_C
ch: 14	24.3	deg_C
ch: 15	23.1	deg_C
ch: 16	51.9	deg_C
ch: 17	53.5	deg_C
ch: 18	47.4	deg_C
ch: 19	44.7	deg_C

EXP 01--SCAN 260--11:25:21:56:26
[redacted] Thermal Survey/Mueller"

ch: 01	24.4	deg_C
ch: 02	23.6	deg_C
ch: 03	46.8	deg_C
ch: 04	46.5	deg_C
ch: 05	46.2	deg_C
ch: 06	46.6	deg_C
ch: 07	56.0	deg_C
ch: 08	55.7	deg_C
ch: 09	52.9	deg_C
ch: 10	51.4	deg_C
ch: 11	22.0	deg_C
ch: 12	21.9	deg_C
ch: 13	22.1	deg_C
ch: 14	22.5	deg_C
ch: 15	24.3	deg_C
ch: 16	57.1	deg_C
ch: 17	59.8	deg_C
ch: 18	51.6	deg_C
ch: 19	48.2	deg_C

EXP 01--SCAN 265--11:25:22:11:26
[redacted] Thermal Survey/Mueller"

ch: 01	24.4	deg_C
ch: 02	23.8	deg_C
ch: 03	49.8	deg_C
ch: 04	48.6	deg_C
ch: 05	47.7	deg_C
ch: 06	48.5	deg_C
ch: 07	57.6	deg_C
ch: 08	57.3	deg_C
ch: 09	55.0	deg_C
ch: 10	53.6	deg_C
ch: 11	22.2	deg_C
ch: 12	22.2	deg_C
ch: 13	22.3	deg_C
ch: 14	22.7	deg_C
ch: 15	23.5	deg_C
ch: 16	58.5	deg_C
ch: 17	60.9	deg_C
ch: 18	53.9	deg_C
ch: 19	50.5	deg_C

EXP 01--SCAN 280--11:25:22:26:26
[redacted] Thermal Survey/Mueller"

ch: 01	38.9	deg_C
ch: 02	38.2	deg_C
ch: 03	45.4	deg_C
ch: 04	44.9	deg_C
ch: 05	43.3	deg_C
ch: 06	45.9	deg_C
ch: 07	51.7	deg_C
ch: 08	52.6	deg_C
ch: 09	50.0	deg_C
ch: 10	49.3	deg_C
ch: 11	22.0	deg_C
ch: 12	22.1	deg_C
ch: 13	22.2	deg_C
ch: 14	24.1	deg_C
ch: 15	24.2	deg_C
ch: 16	53.8	deg_C
ch: 17	55.2	deg_C
ch: 19	49.9	deg_C
ch: 19	46.3	deg_C

22:15 SET CHAMBER TO +40°C
CHECK THERMOCOUPLE SETUP

EXP 01--SCAN 255--11:25:22:01:25
[redacted] Thermal Survey/Mueller"

ch: 01	24.5	deg_C
ch: 02	24.2	deg_C
ch: 03	47.5	deg_C
ch: 04	47.4	deg_C
ch: 05	47.0	deg_C
ch: 06	47.3	deg_C
ch: 07	56.7	deg_C
ch: 08	56.5	deg_C
ch: 09	53.9	deg_C
ch: 10	52.3	deg_C
ch: 11	21.9	deg_C
ch: 12	21.9	deg_C
ch: 13	22.0	deg_C
ch: 14	22.4	deg_C
ch: 15	23.8	deg_C
ch: 16	57.9	deg_C
ch: 17	60.7	deg_C
ch: 18	52.6	deg_C
ch: 19	48.1	deg_C

EXP 01--SCAN 270--11:25:22:16:25
[redacted] Thermal Survey/Mueller"

ch: 01	42.6	deg_C
ch: 02	38.6	deg_C
ch: 03	43.7	deg_C
ch: 04	45.1	deg_C
ch: 05	38.9	deg_C
ch: 06	44.7	deg_C
ch: 07	51.3	deg_C
ch: 08	50.9	deg_C
ch: 09	51.0	deg_C
ch: 10	50.7	deg_C
ch: 11	22.3	deg_C
ch: 12	22.4	deg_C
ch: 13	22.4	deg_C
ch: 14	23.0	deg_C
ch: 15	23.0	deg_C
ch: 16	53.5	deg_C
ch: 17	54.9	deg_C
ch: 18	50.3	deg_C
ch: 19	47.6	deg_C

EXP 01--SCAN 285--11:25:22:31:2
[redacted] Thermal Survey/Mueller"

ch: 01	40.1	deg_C
ch: 02	39.2	deg_C
ch: 03	47.9	deg_C
ch: 04	47.2	deg_C
ch: 05	45.4	deg_C
ch: 06	48.5	deg_C
ch: 07	52.5	deg_C
ch: 08	55.0	deg_C
ch: 09	53.1	deg_C
ch: 10	51.8	deg_C
ch: 11	22.1	deg_C
ch: 12	22.2	deg_C
ch: 13	22.3	deg_C
ch: 14	23.8	deg_C
ch: 15	23.5	deg_C
ch: 16	55.6	deg_C
ch: 17	57.3	deg_C
ch: 19	51.4	deg_C
ch: 19	48.1	deg_C

EXP 01--SCAN 290--11·25·22·36·25
[redacted] Thermal Survey/Mueller"

ch· 01	40.4	deg_C
ch· 02	39.7	deg_C
ch· 03	49.0	deg_C
ch· 04	49.6	deg_C
ch· 05	48.1	deg_C
ch· 06	49.9	deg_C
ch· 07	53.1	deg_C
ch· 08	56.3	deg_C
ch· 09	55.0	deg_C
ch· 10	53.1	deg_C
ch· 11	22.1	deg_C
ch· 12	22.2	deg_C
ch· 13	22.2	deg_C
ch· 14	23.1	deg_C
ch· 15	23.5	deg_C
ch· 16	57.1	deg_C
ch· 17	58.3	deg_C
ch· 18	53.1	deg_C
ch· 19	50.8	deg_C

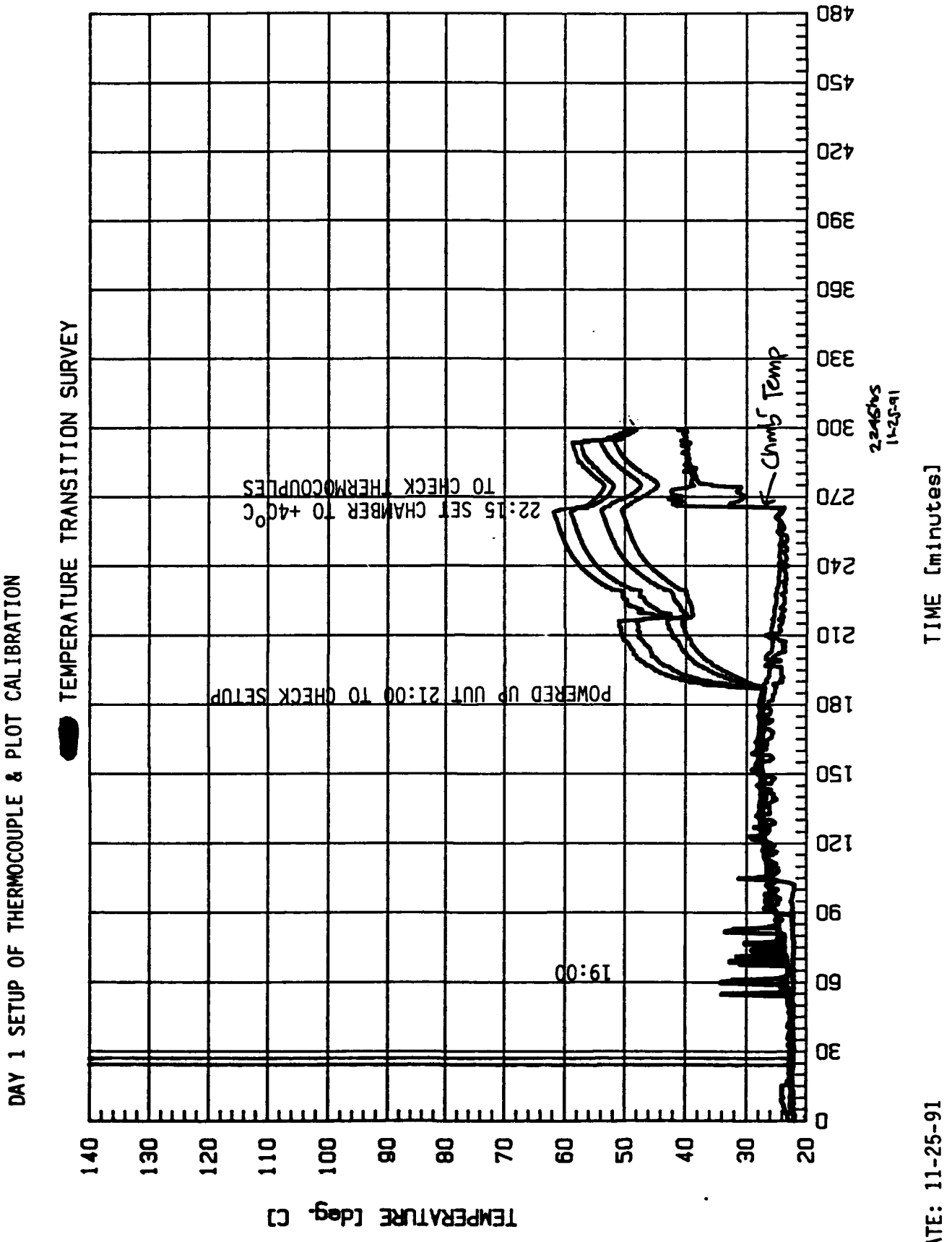
EXP 01--SCAN 295--11·25·22·41·26
[redacted] Thermal Survey/Mueller"

ch· 01	40.6	deg_C
ch· 02	40.2	deg_C
ch· 03	49.5	deg_C
ch· 04	49.6	deg_C
ch· 05	48.6	deg_C
ch· 06	50.6	deg_C
ch· 07	52.5	deg_C
ch· 08	55.5	deg_C
ch· 09	55.6	deg_C
ch· 10	53.0	deg_C
ch· 11	22.1	deg_C
ch· 12	22.2	deg_C
ch· 13	22.3	deg_C
ch· 14	23.5	deg_C
ch· 15	24.3	deg_C
ch· 16	56.8	deg_C
ch· 17	55.9	deg_C
ch· 18	54.0	deg_C
ch· 19	61.7	deg_C

START TRIAL TEST PAGE 7 (DAY 1)

DAY 1

40°C, 60°C, 68°C CHAMBER TEMP


DAY 1 SETUP OF THERMOCOUPLE & PLOT CALIBRATION
TEMPERATURE TRANSITION SURVEY
TEMPERATURE [deg. C]
TIME [minutes]
DATE: 11-25-91
POWERED UP UUT 21:00 TO CHECK SETUP
22:15 SET CHAMBER TO +40°C
TO CHECK THERMOCOUPLES
19:00
Chmbr Temp
224Shs
11-25-91
140
130
120
110
100
90
80
70
60
50
40
30
20
480
450
420
390
360
330
300
270
240
210
180
150
120
90
60
30
0

DAY I; 11-25-91 to 11-26-91
STEP-STRESS TRIAL TEST

22:50 START PLOT; +40°C; UUT OFF

EXP 01--SCAN 005--11:25:22:54:45
[redacted] Thermal Survey/Mueller"

ch: 01	39.6	deg_C
ch: 02	39.6	deg_C
ch: 03	41.4	deg_C
ch: 04	41.7	deg_C
ch: 05	41.3	deg_C
ch: 06	41.7	deg_C
ch: 07	41.7	deg_C
ch: 08	42.1	deg_C
ch: 09	42.2	deg_C
ch: 10	42.0	deg_C
ch: 11	22.2	deg_C
ch: 12	22.3	deg_C
ch: 13	22.3	deg_C
ch: 14	23.5	deg_C
ch: 15	22.9	deg_C
ch: 16	41.7	deg_C
ch: 17	41.5	deg_C
ch: 18	42.2	deg_C
ch: 19	42.3	deg_C

EXP 01--SCAN 010--11:25:22:59:45
[redacted] Thermal Survey/Mueller"

ch: 01	40.2	deg_C
ch: 02	40.3	deg_C
ch: 03	40.9	deg_C
ch: 04	41.0	deg_C
ch: 05	40.8	deg_C
ch: 06	40.9	deg_C
ch: 07	41.0	deg_C
ch: 08	41.2	deg_C
ch: 09	41.2	deg_C
ch: 10	41.1	deg_C
ch: 11	22.0	deg_C
ch: 12	22.4	deg_C
ch: 13	22.4	deg_C
ch: 14	24.3	deg_C
ch: 15	24.5	deg_C
ch: 16	41.0	deg_C
ch: 17	41.0	deg_C
ch: 18	41.2	deg_C
ch: 19	41.3	deg_C

EXP 01--SCAN 015--11:25:23:04:45
[redacted] Thermal Survey/Mueller"

ch: 01	40.0	deg_C
ch: 02	39.9	deg_C
ch: 03	40.5	deg_C
ch: 04	40.6	deg_C
ch: 05	40.3	deg_C
ch: 06	40.5	deg_C
ch: 07	40.6	deg_C
ch: 08	40.7	deg_C
ch: 09	40.7	deg_C
ch: 10	40.6	deg_C
ch: 11	22.2	deg_C
ch: 12	22.3	deg_C
ch: 13	22.3	deg_C
ch: 14	24.0	deg_C
ch: 15	23.6	deg_C
ch: 16	40.6	deg_C
ch: 17	40.6	deg_C
ch: 18	40.7	deg_C
ch: 19	40.8	deg_C

EXP 01--SCAN 020--11:25:23:09:45
[redacted] Thermal Survey/Mueller"

ch: 01	40.1	deg_C
ch: 02	39.9	deg_C
ch: 03	40.3	deg_C
ch: 04	40.4	deg_C
ch: 05	40.2	deg_C
ch: 06	40.3	deg_C
ch: 07	40.4	deg_C
ch: 08	40.4	deg_C
ch: 09	40.4	deg_C
ch: 10	40.4	deg_C
ch: 11	22.2	deg_C
ch: 12	22.3	deg_C
ch: 13	22.4	deg_C
ch: 14	23.9	deg_C
ch: 15	23.5	deg_C
ch: 16	40.4	deg_C
ch: 17	40.4	deg_C
ch: 18	40.5	deg_C
ch: 19	40.5	deg_C

EXP 01--SCAN 025--11:25:23:14:45
[redacted] Thermal Survey/Mueller"

ch: 01	35.4	deg_C
ch: 02	33.5	deg_C
ch: 03	37.9	deg_C
ch: 04	36.3	deg_C
ch: 05	37.1	deg_C
ch: 06	37.1	deg_C
ch: 07	37.9	deg_C
ch: 08	38.4	deg_C
ch: 09	38.7	deg_C
ch: 10	39.0	deg_C
ch: 11	23.1	deg_C
ch: 12	23.1	deg_C
ch: 13	23.1	deg_C
ch: 14	24.8	deg_C
ch: 15	23.9	deg_C
ch: 16	38.8	deg_C
ch: 17	38.9	deg_C
ch: 18	37.9	deg_C
ch: 19	38.5	deg_C

EXP 01--SCAN 030--11:25:23:19:45
[redacted] Thermal Survey/Mueller"

ch: 01	35.3	deg_C
ch: 02	32.1	deg_C
ch: 03	35.4	deg_C
ch: 04	33.2	deg_C
ch: 05	33.1	deg_C
ch: 06	33.3	deg_C
ch: 07	34.5	deg_C
ch: 08	35.2	deg_C
ch: 09	34.5	deg_C
ch: 10	36.1	deg_C
ch: 11	22.5	deg_C
ch: 12	22.5	deg_C
ch: 13	22.6	deg_C
ch: 14	25.4	deg_C
ch: 15	23.3	deg_C
ch: 16	36.4	deg_C
ch: 17	36.2	deg_C
ch: 18	34.6	deg_C
ch: 19	34.8	deg_C

TRIAL TEST RUN

EXP 01--SCAN 035--11:25:23:24:45
[redacted] Thermal Survey/Mueller"

ch: 01	35.9	deg_C
ch: 02	39.8	deg_C
ch: 03	36.1	deg_C
ch: 04	35.3	deg_C
ch: 05	33.6	deg_C
ch: 06	34.5	deg_C
ch: 07	34.4	deg_C
ch: 08	34.6	deg_C
ch: 09	33.9	deg_C
ch: 10	35.4	deg_C
ch: 11	22.3	deg_C
ch: 12	22.3	deg_C
ch: 13	22.3	deg_C
ch: 14	24.0	deg_C
ch: 15	24.2	deg_C
ch: 16	36.1	deg_C
ch: 17	36.0	deg_C
ch: 18	34.7	deg_C
ch: 19	33.9	deg_C

23:25; +40°C; TURN UUT PWR ON
(SETUP CAL COMPLETE)
BEGIN TO SAMPLE TEMP.

EXP 01--SCAN 040--11:25:23:29:45
[redacted] Thermal Survey/Mueller"

ch: 01	40.2	deg_C
ch: 02	40.6	deg_C
ch: 03	39.3	deg_C
ch: 04	40.6	deg_C
ch: 05	41.5	deg_C
ch: 06	40.8	deg_C
ch: 07	46.9	deg_C
ch: 08	47.4	deg_C
ch: 09	43.9	deg_C
ch: 10	39.8	deg_C
ch: 11	22.2	deg_C
ch: 12	22.3	deg_C
ch: 13	22.4	deg_C
ch: 14	25.0	deg_C
ch: 15	24.3	deg_C
ch: 16	38.1	deg_C
ch: 17	39.1	deg_C
ch: 18	43.0	deg_C
ch: 19	41.3	deg_C

EXP 01--SCAN 045--11:25:23:34:45
[redacted] Thermal Survey/Mueller"

ch: 01	43.2	deg_C
ch: 02	40.9	deg_C
ch: 03	41.4	deg_C
ch: 04	44.2	deg_C
ch: 05	45.2	deg_C
ch: 06	44.2	deg_C
ch: 07	50.7	deg_C
ch: 08	51.1	deg_C
ch: 09	50.4	deg_C
ch: 10	43.5	deg_C
ch: 11	22.2	deg_C
ch: 12	22.3	deg_C
ch: 13	22.7	deg_C
ch: 14	25.6	deg_C
ch: 15	25.1	deg_C
ch: 16	44.0	deg_C
ch: 17	47.8	deg_C
ch: 18	47.2	deg_C
ch: 19	46.8	deg_C

EXP 01--SCAN 050--11:25:23:39:45
[redacted] Thermal Survey/Mueller"

ch: 01	44.8	deg_C
ch: 02	40.4	deg_C
ch: 03	47.5	deg_C
ch: 04	46.6	deg_C
ch: 05	49.0	deg_C
ch: 06	46.4	deg_C
ch: 07	53.9	deg_C
ch: 08	55.0	deg_C
ch: 09	54.1	deg_C
ch: 10	50.5	deg_C
ch: 11	22.3	deg_C
ch: 12	22.4	deg_C
ch: 13	22.9	deg_C
ch: 14	27.4	deg_C
ch: 15	24.2	deg_C
ch: 16	54.7	deg_C
ch: 17	57.7	deg_C
ch: 18	50.5	deg_C
ch: 19	49.2	deg_C

EXP 01--SCAN 055--11:25:23:44:45
[redacted] Thermal Survey/Mueller"

ch: 01	45.9	deg_C
ch: 02	41.1	deg_C
ch: 03	52.2	deg_C
ch: 04	49.3	deg_C
ch: 05	50.6	deg_C
ch: 06	47.7	deg_C
ch: 07	55.1	deg_C
ch: 08	57.2	deg_C
ch: 09	56.1	deg_C
ch: 10	53.4	deg_C
ch: 11	22.2	deg_C
ch: 12	22.2	deg_C
ch: 13	22.9	deg_C
ch: 14	25.8	deg_C
ch: 15	24.1	deg_C
ch: 16	57.7	deg_C
ch: 17	60.4	deg_C
ch: 18	52.5	deg_C
ch: 19	51.2	deg_C

START DATA AVG
EXP 01--SCAN 060--11:25:23:49:45
[redacted] Thermal Survey/Mueller"

ch: 01	46.5	deg_C
ch: 02	41.4	deg_C
ch: 03	51.3	deg_C
ch: 04	49.1	deg_C
ch: 05	51.5	deg_C
ch: 06	48.6	deg_C
ch: 07	56.2	deg_C
ch: 08	58.4	deg_C
ch: 09	57.2	deg_C
ch: 10	54.7	deg_C
ch: 11	21.9	deg_C
ch: 12	21.9	deg_C
ch: 13	22.6	deg_C
ch: 14	27.1	deg_C
ch: 15	24.2	deg_C
ch: 16	58.9	deg_C
ch: 17	61.5	deg_C
ch: 18	53.6	deg_C
ch: 19	52.3	deg_C

EXP 01--SCAN 065--11:25:23:54:45
[redacted] Thermal Survey/Mueller"

ch: 01	46.8	deg_C
ch: 02	41.3	deg_C
ch: 03	51.9	deg_C
ch: 04	49.7	deg_C
ch: 05	52.1	deg_C
ch: 06	49.0	deg_C
ch: 07	56.8	deg_C
ch: 08	58.1	deg_C
ch: 09	57.8	deg_C
ch: 10	55.3	deg_C
ch: 11	22.1	deg_C
ch: 12	22.2	deg_C
ch: 13	22.4	deg_C
ch: 14	27.5	deg_C
ch: 15	23.3	deg_C
ch: 16	58.5	deg_C
ch: 17	62.1	deg_C
ch: 18	54.3	deg_C
ch: 19	53.0	deg_C

EXP 01--SCAN 070--11:25:23:59:45
[redacted] Thermal Survey/Mueller"

ch: 01	46.9	deg_C
ch: 02	41.5	deg_C
ch: 03	52.2	deg_C
ch: 04	49.9	deg_C
ch: 05	52.3	deg_C
ch: 06	49.3	deg_C
ch: 07	57.2	deg_C
ch: 08	59.4	deg_C
ch: 09	58.2	deg_C
ch: 10	55.6	deg_C
ch: 11	22.2	deg_C
ch: 12	22.3	deg_C
ch: 13	22.7	deg_C
ch: 14	27.5	deg_C
ch: 15	24.3	deg_C
ch: 16	59.9	deg_C
ch: 17	62.4	deg_C
ch: 18	54.5	deg_C
ch: 19	53.3	deg_C

EXP 01--SCAN 075--11:25:00:04:45
[redacted] Thermal Survey/Mueller"

ch: 01	46.2	deg_C
ch: 02	40.5	deg_C
ch: 03	52.2	deg_C
ch: 04	49.5	deg_C
ch: 05	52.1	deg_C
ch: 06	49.1	deg_C
ch: 07	57.2	deg_C
ch: 08	59.4	deg_C
ch: 09	58.1	deg_C
ch: 10	55.7	deg_C
ch: 11	22.1	deg_C
ch: 12	22.1	deg_C
ch: 13	22.8	deg_C
ch: 14	27.3	deg_C
ch: 15	23.2	deg_C
ch: 16	59.8	deg_C
ch: 17	62.4	deg_C
ch: 18	54.5	deg_C
ch: 19	53.2	deg_C

EXP 01--SCAN 080--11:25:00:09:45
[redacted] Thermal Survey/Mueller"

ch: 01	45.1	deg_C
ch: 02	40.3	deg_C
ch: 03	52.1	deg_C
ch: 04	49.5	deg_C
ch: 05	51.9	deg_C
ch: 06	48.9	deg_C
ch: 07	57.1	deg_C
ch: 08	59.3	deg_C
ch: 09	57.9	deg_C
ch: 10	55.6	deg_C
ch: 11	21.7	deg_C
ch: 12	21.9	deg_C
ch: 13	22.3	deg_C
ch: 14	27.0	deg_C
ch: 15	23.2	deg_C
ch: 16	59.7	deg_C
ch: 17	62.3	deg_C
ch: 18	54.4	deg_C
ch: 19	53.1	deg_C

EXP 01--SCAN 085--11:25:00:14:45
[redacted] Thermal Survey/Mueller"

ch: 01	45.1	deg_C
ch: 02	40.5	deg_C
ch: 03	52.1	deg_C
ch: 04	49.5	deg_C
ch: 05	51.8	deg_C
ch: 06	48.8	deg_C
ch: 07	57.1	deg_C
ch: 08	59.3	deg_C
ch: 09	57.8	deg_C
ch: 10	55.5	deg_C
ch: 11	21.7	deg_C
ch: 12	21.9	deg_C
ch: 13	22.3	deg_C
ch: 14	26.3	deg_C
ch: 15	22.8	deg_C
ch: 16	59.7	deg_C
ch: 17	62.3	deg_C
ch: 18	54.3	deg_C
ch: 19	53.0	deg_C

EXP 01--SCAN 090--11:25:00:19:45
[redacted] Thermal Survey/Mueller"

ch: 01	46.1	deg_C
ch: 02	40.9	deg_C
ch: 03	52.0	deg_C
ch: 04	49.4	deg_C
ch: 05	51.9	deg_C
ch: 06	48.9	deg_C
ch: 07	57.0	deg_C
ch: 08	59.2	deg_C
ch: 09	57.9	deg_C
ch: 10	55.5	deg_C
ch: 11	21.8	deg_C
ch: 12	21.9	deg_C
ch: 13	22.4	deg_C
ch: 14	26.3	deg_C
ch: 15	22.8	deg_C
ch: 16	59.7	deg_C
ch: 17	62.3	deg_C
ch: 18	54.2	deg_C
ch: 19	53.0	deg_C

EXP 01--SCAN 095--11:26:00:24:45
[redacted] Thermal Survey/Mueller"

ch: 01	46.0	deg_C
ch: 02	40.6	deg_C
ch: 03	51.9	deg_C
ch: 04	49.3	deg_C
ch: 05	51.7	deg_C
ch: 06	49.7	deg_C
ch: 07	56.9	deg_C
ch: 08	59.1	deg_C
ch: 09	57.7	deg_C
ch: 10	55.4	deg_C
ch: 11	21.7	deg_C
ch: 12	21.9	deg_C
ch: 13	22.3	deg_C
ch: 14	26.7	deg_C
ch: 15	23.5	deg_C
ch: 16	59.5	deg_C
ch: 17	62.2	deg_C
ch: 18	54.1	deg_C
ch: 19	52.9	deg_C

EXP 01--SCAN 110--11:26:00:39:45
[redacted] Thermal Survey/Mueller"

ch: 01	57.3	deg_C
ch: 02	57.0	deg_C
ch: 03	61.2	deg_C
ch: 04	59.7	deg_C
ch: 05	59.5	deg_C
ch: 06	59.3	deg_C
ch: 07	65.8	deg_C
ch: 08	overload	deg_C
ch: 09	63.5	deg_C
ch: 10	63.3	deg_C
ch: 11	21.6	deg_C
ch: 12	21.7	deg_C
ch: 13	22.1	deg_C
ch: 14	25.6	deg_C
ch: 15	22.8	deg_C
ch: 16	68.4	deg_C
ch: 17	71.2	deg_C
ch: 18	62.9	deg_C
ch: 19	59.8	deg_C

EXP 01--SCAN 125--11:26:00:54:45
[redacted] Thermal Survey/Mueller"

ch: 01	63.4	deg_C
ch: 02	59.0	deg_C
ch: 03	69.7	deg_C
ch: 04	65.5	deg_C
ch: 05	69.2	deg_C
ch: 06	65.9	deg_C
ch: 07	75.6	deg_C
ch: 08	overload	deg_C
ch: 09	73.6	deg_C
ch: 10	72.6	deg_C
ch: 11	23.9	deg_C
ch: 12	24.0	deg_C
ch: 13	26.3	deg_C
ch: 14	28.4	deg_C
ch: 15	24.1	deg_C
ch: 16	77.0	deg_C
ch: 17	79.7	deg_C
ch: 18	71.9	deg_C
ch: 19	69.4	deg_C

END DATA AVG.

EXP 01--SCAN 100--11:26:00:29:45
[redacted] Thermal Survey/Mueller"

ch: 01	45.9	deg_C
ch: 02	39.9	deg_C
ch: 03	51.9	deg_C
ch: 04	49.3	deg_C
ch: 05	51.7	deg_C
ch: 06	48.7	deg_C
ch: 07	56.9	deg_C
ch: 08	59.2	deg_C
ch: 09	57.7	deg_C
ch: 10	55.4	deg_C
ch: 11	21.9	deg_C
ch: 12	22.0	deg_C
ch: 13	22.4	deg_C
ch: 14	26.8	deg_C
ch: 15	23.5	deg_C
ch: 16	59.5	deg_C
ch: 17	62.2	deg_C
ch: 18	54.1	deg_C
ch: 19	52.9	deg_C

EXP 01--SCAN 115--11:26:00:44:45
[redacted] Thermal Survey/Mueller"

ch: 01	60.7	deg_C
ch: 02	58.4	deg_C
ch: 03	65.6	deg_C
ch: 04	62.8	deg_C
ch: 05	64.1	deg_C
ch: 06	62.2	deg_C
ch: 07	70.9	deg_C
ch: 08	overload	deg_C
ch: 09	68.6	deg_C
ch: 10	68.2	deg_C
ch: 11	22.3	deg_C
ch: 12	22.3	deg_C
ch: 13	22.5	deg_C
ch: 14	25.5	deg_C
ch: 15	23.3	deg_C
ch: 16	72.3	deg_C
ch: 17	75.7	deg_C
ch: 18	67.6	deg_C
ch: 19	64.8	deg_C

EXP 01--SCAN 130--11:26:00:59:45
[redacted] Thermal Survey/Mueller"

ch: 01	63.9	deg_C
ch: 02	59.2	deg_C
ch: 03	70.5	deg_C
ch: 04	67.3	deg_C
ch: 05	69.0	deg_C
ch: 06	65.5	deg_C
ch: 07	75.7	deg_C
ch: 08	overload	deg_C
ch: 09	74.5	deg_C
ch: 10	73.5	deg_C
ch: 11	23.9	deg_C
ch: 12	24.0	deg_C
ch: 13	25.0	deg_C
ch: 14	27.9	deg_C
ch: 15	24.1	deg_C
ch: 16	78.1	deg_C
ch: 17	80.5	deg_C
ch: 18	72.8	deg_C
ch: 19	70.3	deg_C

START DATA AVG.

EXP 01--SCAN 105--11:26:00:34:45
[redacted] Thermal Survey/Mueller"

ch: 01	59.1	deg_C
ch: 02	52.6	deg_C
ch: 03	53.9	deg_C
ch: 04	51.7	deg_C
ch: 05	52.9	deg_C
ch: 06	51.5	deg_C
ch: 07	58.2	deg_C
ch: 08	overload	deg_C
ch: 09	58.1	deg_C
ch: 10	56.0	deg_C
ch: 11	21.6	deg_C
ch: 12	21.7	deg_C
ch: 13	22.3	deg_C
ch: 14	26.4	deg_C
ch: 15	22.7	deg_C
ch: 16	61.0	deg_C
ch: 17	63.4	deg_C
ch: 18	55.0	deg_C
ch: 19	53.6	deg_C

LOOSE TC?

EXP 01--SCAN 120--11:26:00:49:45
[redacted] Thermal Survey/Mueller"

ch: 01	62.5	deg_C
ch: 02	59.0	deg_C
ch: 03	69.2	deg_C
ch: 04	65.2	deg_C
ch: 05	66.0	deg_C
ch: 06	64.5	deg_C
ch: 07	74.0	deg_C
ch: 08	overload	deg_C
ch: 09	71.0	deg_C
ch: 10	70.9	deg_C
ch: 11	23.0	deg_C
ch: 12	24.1	deg_C
ch: 13	26.5	deg_C
ch: 14	28.1	deg_C
ch: 15	24.0	deg_C
ch: 16	75.4	deg_C
ch: 17	78.1	deg_C
ch: 18	70.4	deg_C
ch: 19	67.8	deg_C

EXP 01--SCAN 135--11:26:01:04:45
[redacted] Thermal Survey/Mueller"

ch: 01	64.3	deg_C
ch: 02	59.3	deg_C
ch: 03	71.1	deg_C
ch: 04	67.8	deg_C
ch: 05	69.5	deg_C
ch: 06	66.9	deg_C
ch: 07	77.2	deg_C
ch: 08	overload	deg_C
ch: 09	75.1	deg_C
ch: 10	74.1	deg_C
ch: 11	23.3	deg_C
ch: 12	23.9	deg_C
ch: 13	25.9	deg_C
ch: 14	25.8	deg_C
ch: 15	24.3	deg_C
ch: 16	78.6	deg_C
ch: 17	81.9	deg_C
ch: 18	73.4	deg_C
ch: 19	70.8	deg_C

00:36 RAMP TO +60°C; LEVEL 0
SEARCH FOR +70°C
COMPONENT TEMP.)

TRIAL TEST RUN

EXP 01--SCAN 140--11:26:01:09:45
[redacted] Thermal Survey/Mueler*

ch: 01	64.5	deg_C
ch: 02	59.3	deg_C
ch: 03	71.3	deg_C
ch: 04	69.0	deg_C
ch: 05	69.7	deg_C
ch: 06	67.2	deg_C
ch: 07	77.6	deg_C
ch: 08	overload	deg_C
ch: 09	75.4	deg_C
ch: 10	74.4	deg_C
ch: 11	23.4	deg_C
ch: 12	24.0	deg_C
ch: 13	25.5	deg_C
ch: 14	27.0	deg_C
ch: 15	24.1	deg_C
ch: 16	79.9	deg_C
ch: 17	81.3	deg_C
ch: 18	73.5	deg_C
ch: 19	71.2	deg_C

EXP 01--SCAN 145--11:26:01:14:45
[redacted] Thermal Survey/Mueler*

ch: 01	64.5	deg_C
ch: 02	59.2	deg_C
ch: 03	71.5	deg_C
ch: 04	69.2	deg_C
ch: 05	69.9	deg_C
ch: 06	67.3	deg_C
ch: 07	77.9	deg_C
ch: 08	overload	deg_C
ch: 09	75.6	deg_C
ch: 10	74.5	deg_C
ch: 11	23.3	deg_C
ch: 12	23.9	deg_C
ch: 13	25.4	deg_C
ch: 14	25.9	deg_C
ch: 15	24.4	deg_C
ch: 16	79.1	deg_C
ch: 17	81.4	deg_C
ch: 18	73.8	deg_C
ch: 19	71.3	deg_C

EXP 01--SCAN 150--11:26:01:19:45
[redacted] Thermal Survey/Mueler*

ch: 01	64.6	deg_C
ch: 02	59.3	deg_C
ch: 03	71.6	deg_C
ch: 04	69.3	deg_C
ch: 05	69.9	deg_C
ch: 06	67.4	deg_C
ch: 07	77.9	deg_C
ch: 08	overload	deg_C
ch: 09	75.7	deg_C
ch: 10	74.7	deg_C
ch: 11	23.1	deg_C
ch: 12	23.7	deg_C
ch: 13	25.2	deg_C
ch: 14	26.6	deg_C
ch: 15	24.1	deg_C
ch: 16	79.2	deg_C
ch: 17	81.5	deg_C
ch: 18	73.9	deg_C
ch: 19	71.4	deg_C

EXP 01--SCAN 155--11:26:01:24:45
[redacted] Thermal Survey/Mueler*

ch: 01	64.5	deg_C
ch: 02	59.3	deg_C
ch: 03	71.4	deg_C
ch: 04	67.0	deg_C
ch: 05	69.9	deg_C
ch: 06	66.5	deg_C
ch: 07	73.9	deg_C
ch: 08	overload	deg_C
ch: 09	75.7	deg_C
ch: 10	74.5	deg_C
ch: 11	23.3	deg_C
ch: 12	23.7	deg_C
ch: 13	25.1	deg_C
ch: 14	25.7	deg_C
ch: 15	24.5	deg_C
ch: 16	79.1	deg_C
ch: 17	81.4	deg_C
ch: 18	70.7	deg_C
ch: 19	69.6	deg_C

01:25 LEVEL 0; TURN A4 PWR OFF AT CONNECTOR; DETECTORS ARE RAILED TOWARDS +5V

EXP 01--SCAN 160--11:26:01:29:45
[redacted] Thermal Survey/Mueler*

ch: 01	64.4	deg_C
ch: 02	59.3	deg_C
ch: 03	71.3	deg_C
ch: 04	67.7	deg_C
ch: 05	69.7	deg_C
ch: 06	67.0	deg_C
ch: 07	75.9	deg_C
ch: 08	overload	deg_C
ch: 09	75.4	deg_C
ch: 10	74.3	deg_C
ch: 11	23.3	deg_C
ch: 12	23.8	deg_C
ch: 13	25.0	deg_C
ch: 14	25.9	deg_C
ch: 15	24.0	deg_C
ch: 16	78.9	deg_C
ch: 17	81.2	deg_C
ch: 18	73.1	deg_C
ch: 19	70.8	deg_C

TURN A4 PWR BACK ON

EXP 01--SCAN 165--11:26:01:34:45
[redacted] Thermal Survey/Mueler*

ch: 01	64.6	deg_C
ch: 02	59.4	deg_C
ch: 03	71.4	deg_C
ch: 04	69.1	deg_C
ch: 05	69.8	deg_C
ch: 06	67.3	deg_C
ch: 07	77.6	deg_C
ch: 08	overload	deg_C
ch: 09	75.5	deg_C
ch: 10	74.5	deg_C
ch: 11	23.2	deg_C
ch: 12	23.5	deg_C
ch: 13	24.8	deg_C
ch: 14	26.1	deg_C
ch: 15	24.1	deg_C
ch: 16	79.8	deg_C
ch: 17	81.4	deg_C
ch: 18	73.7	deg_C
ch: 19	71.2	deg_C

END DATA AVG.

EXP 01--SCAN 170--11:26:01:39:45
[redacted] Thermal Survey/Mueler*

ch: 01	64.6	deg_C
ch: 02	59.3	deg_C
ch: 03	71.6	deg_C
ch: 04	69.3	deg_C
ch: 05	69.9	deg_C
ch: 06	67.4	deg_C
ch: 07	77.8	deg_C
ch: 08	overload	deg_C
ch: 09	75.7	deg_C
ch: 10	74.7	deg_C
ch: 11	23.2	deg_C
ch: 12	23.6	deg_C
ch: 13	24.7	deg_C
ch: 14	25.5	deg_C
ch: 15	23.8	deg_C
ch: 16	79.1	deg_C
ch: 17	81.5	deg_C
ch: 18	73.8	deg_C
ch: 19	71.4	deg_C

01:40 RAMP TO LEVEL 1; +68°C (+78°C COMPONENT AVG.)

EXP 01--SCAN 175--11:26:01:44:45
[redacted] Thermal Survey/Mueler*

ch: 01	67.0	deg_C
ch: 02	64.8	deg_C
ch: 03	72.8	deg_C
ch: 04	69.8	deg_C
ch: 05	70.8	deg_C
ch: 06	69.1	deg_C
ch: 07	78.5	deg_C
ch: 08	overload	deg_C
ch: 09	76.1	deg_C
ch: 10	75.3	deg_C
ch: 11	22.7	deg_C
ch: 12	23.5	deg_C
ch: 13	25.1	deg_C
ch: 14	26.2	deg_C
ch: 15	24.5	deg_C
ch: 16	80.1	deg_C
ch: 17	82.1	deg_C
ch: 18	74.8	deg_C
ch: 19	72.1	deg_C

EXP 01--SCAN 180--11:26:01:49:45
[redacted] Thermal Survey/Mueler*

ch: 01	69.6	deg_C
ch: 02	66.2	deg_C
ch: 03	75.3	deg_C
ch: 04	72.3	deg_C
ch: 05	73.5	deg_C
ch: 06	71.6	deg_C
ch: 07	80.9	deg_C
ch: 08	overload	deg_C
ch: 09	78.5	deg_C
ch: 10	78.0	deg_C
ch: 11	23.5	deg_C
ch: 12	24.0	deg_C
ch: 13	25.1	deg_C
ch: 14	26.7	deg_C
ch: 15	24.8	deg_C
ch: 16	82.7	deg_C
ch: 17	85.1	deg_C
ch: 18	77.3	deg_C
ch: 19	74.7	deg_C

EXP 01--SCAN 195--11:26:01:54:45
[redacted] Thermal Survey/Mueler"

ch: 01	70.8	deg_C
ch: 02	66.7	deg_C
ch: 03	77.0	deg_C
ch: 04	73.9	deg_C
ch: 05	75.3	deg_C
ch: 06	73.1	deg_C
ch: 07	92.8	deg_C
ch: 08	overload	deg_C
ch: 09	80.5	deg_C
ch: 10	79.9	deg_C
ch: 11	23.3	deg_C
ch: 12	24.1	deg_C
ch: 13	25.0	deg_C
ch: 14	26.7	deg_C
ch: 15	23.9	deg_C
ch: 16	94.4	deg_C
ch: 17	86.9	deg_C
ch: 18	79.0	deg_C
ch: 19	76.5	deg_C

EXP 01--SCAN 200--11:26:02:09:45
[redacted] Thermal Survey/Mueler"

ch: 01	72.1	deg_C
ch: 02	67.1	deg_C
ch: 03	79.0	deg_C
ch: 04	75.7	deg_C
ch: 05	77.3	deg_C
ch: 06	74.9	deg_C
ch: 07	95.1	deg_C
ch: 08	overload	deg_C
ch: 09	83.0	deg_C
ch: 10	82.2	deg_C
ch: 11	22.8	deg_C
ch: 12	23.6	deg_C
ch: 13	24.5	deg_C
ch: 14	25.7	deg_C
ch: 15	23.5	deg_C
ch: 16	86.5	deg_C
ch: 17	88.9	deg_C
ch: 18	81.2	deg_C
ch: 19	78.7	deg_C

EXP 01--SCAN 215--11:26:02:24:45
[redacted] Thermal Survey/Mueler"

ch: 01	72.5	deg_C
ch: 02	67.1	deg_C
ch: 03	79.4	deg_C
ch: 04	76.1	deg_C
ch: 05	77.7	deg_C
ch: 06	75.[illegible]	deg_C
ch: 07	95.[illegible]	deg_C
ch: 08	overload	deg_C
ch: 09	83.5	deg_C
ch: 10	82.7	deg_C
ch: 11	22.9	deg_C
ch: 12	23.4	deg_C
ch: 13	24.3	deg_C
ch: 14	25.5	deg_C
ch: 15	23.7	deg_C
ch: 16	87.0	deg_C
ch: 17	89.2	deg_C
ch: 18	81.6	deg_C
ch: 19	78.2	deg_C

EXP 01--SCAN 190--11:26:01:59:45
[redacted] Thermal Survey/Mueler"

ch: 01	71.5	deg_C
ch: 02	66.9	deg_C
ch: 03	78.0	deg_C
ch: 04	74.0	deg_C
ch: 05	76.3	deg_C
ch: 06	74.0	deg_C
ch: 07	93.9	deg_C
ch: 08	overload	deg_C
ch: 09	81.9	deg_C
ch: 10	81.1	deg_C
ch: 11	22.9	deg_C
ch: 12	23.9	deg_C
ch: 13	24.9	deg_C
ch: 14	25.2	deg_C
ch: 15	24.1	deg_C
ch: 16	88.5	deg_C
ch: 17	87.9	deg_C
ch: 18	80.1	deg_C
ch: 19	77.5	deg_C

EXP 01--SCAN 205--11:26:02:14:45
[redacted] Thermal Survey/Mueler"

ch: 01	72.4	deg_C
ch: 02	67.1	deg_C
ch: 03	79.2	deg_C
ch: 04	76.0	deg_C
ch: 05	77.6	deg_C
ch: 06	75.1	deg_C
ch: 07	95.4	deg_C
ch: 08	overload	deg_C
ch: 09	83.3	deg_C
ch: 10	82.4	deg_C
ch: 11	22.5	deg_C
ch: 12	23.5	deg_C
ch: 13	24.5	deg_C
ch: 14	25.0	deg_C
ch: 15	23.5	deg_C
ch: 16	86.7	deg_C
ch: 17	89.0	deg_C
ch: 18	81.4	deg_C
ch: 19	78.9	deg_C

EXP 01--SCAN 220--11:26:02:29:45
[redacted] Thermal Survey/Mueler"

ch: 01	72.5	deg_C
ch: 02	67.1	deg_C
ch: 03	79.5	deg_C
ch: 04	76.2	deg_C
ch: 05	77.8	deg_C
ch: 06	75.3	deg_C
ch: 07	95.7	deg_C
ch: 08	overload	deg_C
ch: 09	83.5	deg_C
ch: 10	82.7	deg_C
ch: 11	23.0	deg_C
ch: 12	23.4	deg_C
ch: 13	24.2	deg_C
ch: 14	25.0	deg_C
ch: 15	24.0	deg_C
ch: 16	87.0	deg_C
ch: 17	89.2	deg_C
ch: 18	81.7	deg_C
ch: 19	79.3	deg_C

START DATA AVG.

EXP 01--SCAN 195--11:26:02:04:45
[redacted] Thermal Survey/Mueler"

ch: 01	71.9	deg_C
ch: 02	66.9	deg_C
ch: 03	78.7	deg_C
ch: 04	75.4	deg_C
ch: 05	76.9	deg_C
ch: 06	74.5	deg_C
ch: 07	94.7	deg_C
ch: 08	overload	deg_C
ch: 09	92.5	deg_C
ch: 10	81.8	deg_C
ch: 11	22.7	deg_C
ch: 12	23.3	deg_C
ch: 13	24.5	deg_C
ch: 14	24.9	deg_C
ch: 15	24.3	deg_C
ch: 16	95.2	deg_C
ch: 17	88.4	deg_C
ch: 18	80.9	deg_C
ch: 19	78.3	deg_C

EXP 01--SCAN 210--11:26:02:19:45
[redacted] Thermal Survey/Mueler"

ch: 01	72.5	deg_C
ch: 02	67.1	deg_C
ch: 03	79.4	deg_C
ch: 04	76.0	deg_C
ch: 05	77.7	deg_C
ch: 06	75.1	deg_C
ch: 07	95.5	deg_C
ch: 08	overload	deg_C
ch: 09	83.4	deg_C
ch: 10	82.6	deg_C
ch: 11	22.5	deg_C
ch: 12	23.2	deg_C
ch: 13	24.4	deg_C
ch: 14	25.1	deg_C
ch: 15	23.5	deg_C
ch: 16	86.9	deg_C
ch: 17	88.1	deg_C
ch: 18	81.5	deg_C
ch: 19	79.1	deg_C

EXP 01--SCAN 225--11:26:02:34:45
[redacted] Thermal Survey/Mueler"

ch: 01	72.5	deg_C
ch: 02	67.1	deg_C
ch: 03	79.5	deg_C
ch: 04	76.2	deg_C
ch: 05	77.8	deg_C
ch: 06	75.3	deg_C
ch: 07	95.7	deg_C
ch: 08	overload	deg_C
ch: 09	83.6	deg_C
ch: 10	82.7	deg_C
ch: 11	22.5	deg_C
ch: 12	23.1	deg_C
ch: 13	24.1	deg_C
ch: 14	24.8	deg_C
ch: 15	23.4	deg_C
ch: 16	87.0	deg_C
ch: 17	89.3	deg_C
ch: 18	81.7	deg_C
ch: 19	79.3	deg_C

EXP 01--SCAN 230--11:26:02:39:45
[redacted] Thermal Survey/Mueler"

ch: 01	72.5	deg_C
ch: 02	67.1	deg_C
ch: 03	79.5	deg_C
ch: 04	76.2	deg_C
ch: 05	77.9	deg_C
ch: 06	75.3	deg_C
ch: 07	85.8	deg_C
ch: 08	overload	deg_C
ch: 09	93.5	deg_C
ch: 10	82.7	deg_C
ch: 11	22.4	deg_C
ch: 12	23.0	deg_C
ch: 13	24.0	deg_C
ch: 14	24.3	deg_C
ch: 15	23.5	deg_C
ch: 16	87.0	deg_C
ch: 17	89.3	deg_C
ch: 18	81.8	deg_C
ch: 19	79.4	deg_C

END DATA AVG.

EXP 01--SCAN 235--11:26:02:44:45
[redacted] Thermal Survey/Mueler"

ch: 01	71.3	deg_C
ch: 02	59.9	deg_C
ch: 03	80.0	deg_C
ch: 04	75.9	deg_C
ch: 05	78.0	deg_C
ch: 06	75.4	deg_C
ch: 07	86.3	deg_C
ch: 08	overload	deg_C
ch: 09	93.9	deg_C
ch: 10	83.2	deg_C
ch: 11	22.6	deg_C
ch: 12	23.2	deg_C
ch: 13	24.1	deg_C
ch: 14	25.0	deg_C
ch: 15	23.5	deg_C
ch: 16	87.7	deg_C
ch: 17	90.0	deg_C
ch: 18	82.3	deg_C
ch: 19	79.9	deg_C

02:45 TURN UUT PWR OFF
CHAMBER TURNED OFF &
DOOR AJAR

EXP 01--SCAN 240--11:26:02:49:45
[redacted] Thermal Survey/Mueler"

ch: 01	69.5	deg_C
ch: 02	53.4	deg_C
ch: 03	78.9	deg_C
ch: 04	75.2	deg_C
ch: 05	75.2	deg_C
ch: 06	73.7	deg_C
ch: 07	85.9	deg_C
ch: 08	overload	deg_C
ch: 09	93.1	deg_C
ch: 10	82.5	deg_C
ch: 11	22.9	deg_C
ch: 12	23.4	deg_C
ch: 13	24.1	deg_C
ch: 14	24.5	deg_C
ch: 15	23.4	deg_C
ch: 16	86.9	deg_C
ch: 17	89.3	deg_C
ch: 18	81.3	deg_C
ch: 19	79.0	deg_C

EXP 01--SCAN 245--11:26:02:54:45
[redacted] Thermal Survey/Mueler"

ch: 01	65.5	deg_C
ch: 02	49.3	deg_C
ch: 03	76.5	deg_C
ch: 04	72.8	deg_C
ch: 05	73.7	deg_C
ch: 06	71.2	deg_C
ch: 07	83.7	deg_C
ch: 08	overload	deg_C
ch: 09	91.0	deg_C
ch: 10	80.3	deg_C
ch: 11	23.0	deg_C
ch: 12	23.4	deg_C
ch: 13	24.0	deg_C
ch: 14	24.6	deg_C
ch: 15	23.6	deg_C
ch: 15	84.7	deg_C
ch: 17	87.1	deg_C
ch: 18	79.1	deg_C
ch: 19	76.9	deg_C

EXP 01--SCAN 250--11:26:02:59:45
[redacted] Thermal Survey/Mueler"

ch: 01	63.0	deg_C
ch: 02	46.2	deg_C
ch: 03	73.7	deg_C
ch: 04	70.1	deg_C
ch: 05	71.0	deg_C
ch: 06	68.5	deg_C
ch: 07	81.1	deg_C
ch: 08	overload	deg_C
ch: 09	79.3	deg_C
ch: 10	77.7	deg_C
ch: 11	22.9	deg_C
ch: 12	23.5	deg_C
ch: 13	24.1	deg_C
ch: 14	24.2	deg_C
ch: 15	23.5	deg_C
ch: 15	82.1	deg_C
ch: 17	84.4	deg_C
ch: 18	76.5	deg_C
ch: 19	74.2	deg_C

03:00 DOOR COMPLETELY OPENED
UNIT COOLING TO ROOM

EXP 01--SCAN 255--11:26:03:04:45
[redacted] Thermal Survey/Mueler"

ch: 01	55.5	deg_C
ch: 02	33.5	deg_C
ch: 03	67.9	deg_C
ch: 04	63.9	deg_C
ch: 05	66.1	deg_C
ch: 06	63.0	deg_C
ch: 07	76.2	deg_C
ch: 08	overload	deg_C
ch: 09	74.2	deg_C
ch: 10	72.9	deg_C
ch: 11	23.0	deg_C
ch: 12	23.4	deg_C
ch: 13	24.1	deg_C
ch: 14	24.5	deg_C
ch: 15	23.9	deg_C
ch: 16	77.2	deg_C
ch: 17	79.4	deg_C
ch: 18	71.2	deg_C
ch: 19	69.2	deg_C

EXP 01--SCAN 260--11:26:03:09:45
[redacted] Thermal Survey/Mueler"

ch: 01	52.3	deg_C
ch: 02	31.5	deg_C
ch: 03	63.5	deg_C
ch: 04	61.1	deg_C
ch: 05	62.3	deg_C
ch: 06	62.1	deg_C
ch: 07	71.7	deg_C
ch: 08	overload	deg_C
ch: 09	69.9	deg_C
ch: 10	68.4	deg_C
ch: 11	23.0	deg_C
ch: 12	23.3	deg_C
ch: 13	24.1	deg_C
ch: 14	24.2	deg_C
ch: 15	23.9	deg_C
ch: 16	73.0	deg_C
ch: 17	75.0	deg_C
ch: 18	69.6	deg_C
ch: 19	64.7	deg_C

03:10 END PLOT

EXP 01--SCAN 265--11:26:03:22:45
[redacted] Thermal Survey/Mueler"

ch: 01	45.4	deg_C
ch: 02	30.7	deg_C
ch: 03	40.3	deg_C
ch: 04	46.5	deg_C
ch: 05	44.6	deg_C
ch: 06	50.7	deg_C
ch: 07	54.4	deg_C
ch: 08	54.6	deg_C
ch: 09	56.8	deg_C
ch: 10	52.5	deg_C
ch: 11	22.9	deg_C
ch: 12	23.2	deg_C
ch: 13	24.1	deg_C
ch: 14	24.5	deg_C
ch: 15	23.9	deg_C
ch: 16	57.5	deg_C
ch: 17	61.1	deg_C
ch: 18	53.9	deg_C
ch: 19	51.5	deg_C

EXP 01--SCAN 270--11:26:03:27:45
[redacted] Thermal Survey/Mueler"

ch: 01	43.9	deg_C
ch: 02	28.2	deg_C
ch: 03	35.3	deg_C
ch: 04	43.7	deg_C
ch: 05	43.0	deg_C
ch: 06	48.7	deg_C
ch: 07	51.8	deg_C
ch: 08	51.8	deg_C
ch: 09	54.5	deg_C
ch: 10	49.8	deg_C
ch: 11	22.9	deg_C
ch: 12	23.2	deg_C
ch: 13	24.1	deg_C
ch: 14	24.2	deg_C
ch: 15	23.4	deg_C
ch: 16	54.8	deg_C
ch: 17	58.3	deg_C
ch: 18	51.1	deg_C
ch: 19	49.0	deg_C

EXP 01--SCAN 275--11·26·03·32·45
[redacted] Thermal Survey/Mueler"

ch· 01	42.7	deg_C
ch· 02	29.3	deg_C
ch· 03	37.9	deg_C
ch· 04	43.3	deg_C
ch· 05	42.1	deg_C
ch· 06	47.7	deg_C
ch· 07	50.4	deg_C
ch· 08	50.7	deg_C
ch· 09	52.9	deg_C
ch· 10	48.9	deg_C
ch· 11	22.9	deg_C
ch· 12	23.3	deg_C
ch· 13	24.0	deg_C
ch· 14	24.2	deg_C
ch· 15	23.7	deg_C
ch· 16	53.9	deg_C
ch· 17	57.1	deg_C
ch· 18	49.9	deg_C
ch· 19	47.5	deg_C

EXP 01--SCAN 280--11·26·03·37·45
[redacted] Thermal Survey/Mueler"

ch· 01	42.9	deg_C
ch· 02	32.6	deg_C
ch· 03	38.4	deg_C
ch· 04	43.2	deg_C
ch· 05	43.1	deg_C
ch· 06	49.1	deg_C
ch· 07	49.7	deg_C
ch· 08	50.2	deg_C
ch· 09	52.7	deg_C
ch· 10	49.9	deg_C
ch· 11	22.7	deg_C
ch· 12	50.4	deg_C — Zener Resistor @ 87.5°C
ch· 13	22.4	deg_C
ch· 14	23.6	deg_C
ch· 15	23.3	deg_C
ch· 16	54.0	deg_C
ch· 17	56.7	deg_C
ch· 18	49.5	deg_C
ch· 19	47.2	deg_C

USED TC12 TO MEASURE VR1 TEMP
WITH UUT PWR ON MOMENTARILY.
DETECTORS WORKING PER SPEC.

ENDS DAY 1 DATA PRINTOUT
STEP-STRESS TRIAL TEST

DAY 1

40°C, 60°C, 68°C CHAMBER TEMP

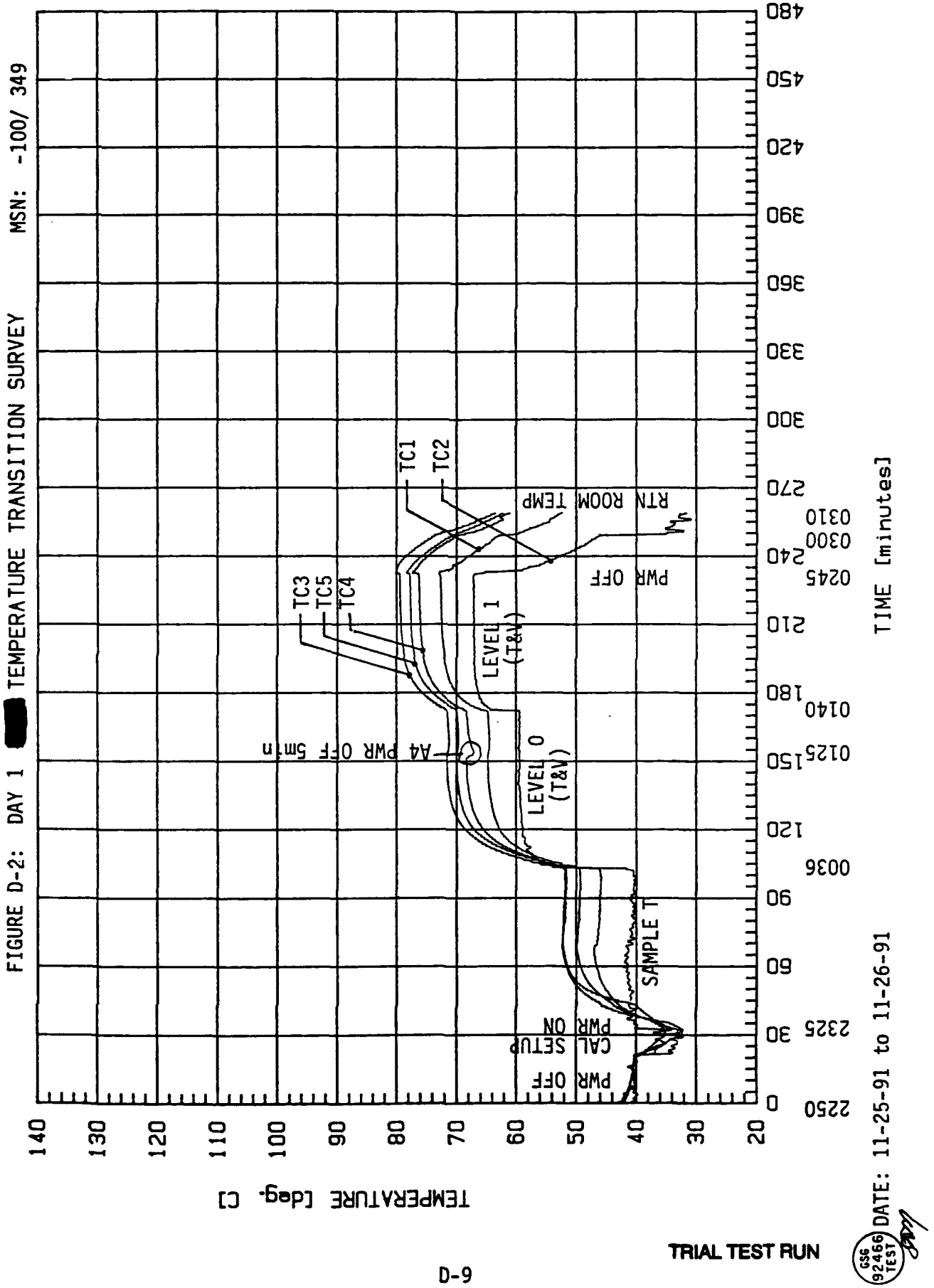


FIGURE D-2: DAY 1 TEMPERATURE TRANSITION SURVEY
MSN: -100/ 349
TEMPERATURE [deg. C]
TIME [minutes]
DATE: 11-25-91 to 11-26-91
TC1
TC2
TC3
TC5
TC4
RTN ROOM TEMP
PWR OFF
LEVEL 1 (T&V)
LEVEL 0 (T&V)
A4 PWR OFF Smin
SAMPLE T
PWR OFF
CAL SETUP
PWR ON
TRIAL TEST RUN
GSG 92466 TEST

DAY 2

60,168

19:34 BEGIN PLOT

PLOT No. 1 IS CHANNEL 1
PLOT No. 2 IS CHANNEL 2
PLOT No. 3 IS CHANNEL 3
PLOT No. 4 IS CHANNEL 4
PLOT No. 5 IS CHANNEL 5
PLOT No. 6 IS CHANNEL 7
PLOT No. 7 IS CHANNEL 9
PLOT No. 8 IS CHANNEL 10
PLOT No. 9 IS CHANNEL 17

19:38 RAMP TO +61 C; UUT OFF

EXP 01--SCAN 004--11-26-19-38-36
[redacted] Thermal Survey/Mueler"

ch 01	26.9	deg_C
ch 02	27.7	deg_C
ch 03	27.1	deg_C
ch 04	27.5	deg_C
ch 05	27.3	deg_C
ch 06	27.4	deg_C
ch 07	27.9	deg_C
ch 08	28.3	deg_C
ch 09	27.5	deg_C
ch 10	27.4	deg_C
ch 11	22.4	deg_C
ch 12	22.2	deg_C
ch 13	22.0	deg_C
ch 14	22.7	deg_C
ch 15	22.9	deg_C
ch 16	27.3	deg_C
ch 17	27.3	deg_C
ch 18	27.9	deg_C
ch 19	27.9	deg_C

EXP 01--SCAN 008--11-26-19-42-36
[redacted] Thermal Survey/Mueler"

ch 01	41.8	deg_C
ch 02	53.5	deg_C
ch 03	35.5	deg_C
ch 04	36.5	deg_C
ch 05	34.9	deg_C
ch 06	38.2	deg_C
ch 07	32.6	deg_C
ch 08	34.4	deg_C
ch 09	31.4	deg_C
ch 10	32.9	deg_C
ch 11	22.3	deg_C
ch 12	22.3	deg_C
ch 13	22.1	deg_C
ch 14	22.8	deg_C
ch 15	23.5	deg_C
ch 16	34.3	deg_C
ch 17	34.8	deg_C
ch 18	34.2	deg_C
ch 19	33.1	deg_C

EXP 01--SCAN 012--11-26-19-46-36
[redacted] Thermal Survey/Mueler"

ch 01	49.2	deg_C
ch 02	56.3	deg_C
ch 03	44.3	deg_C
ch 04	44.9	deg_C
ch 05	43.9	deg_C
ch 06	46.2	deg_C
ch 07	41.4	deg_C
ch 08	43.3	deg_C
ch 09	40.4	deg_C
ch 10	42.7	deg_C
ch 11	22.5	deg_C
ch 12	22.3	deg_C
ch 13	22.1	deg_C
ch 14	23.8	deg_C
ch 15	23.2	deg_C
ch 16	43.7	deg_C
ch 17	44.2	deg_C
ch 18	42.8	deg_C
ch 19	42.3	deg_C

EXP 01--SCAN 016--11-26-19-50-36
[redacted] Thermal Survey/Mueler"

ch 01	53.4	deg_C
ch 02	58.4	deg_C
ch 03	50.1	deg_C
ch 04	50.3	deg_C
ch 05	49.8	deg_C
ch 06	51.4	deg_C
ch 07	49.1	deg_C
ch 08	49.9	deg_C
ch 09	47.5	deg_C
ch 10	49.2	deg_C
ch 11	23.6	deg_C
ch 12	22.7	deg_C
ch 13	22.2	deg_C
ch 14	24.7	deg_C
ch 15	23.4	deg_C
ch 16	45.8	deg_C
ch 17	50.2	deg_C
ch 18	48.1	deg_C
ch 19	48.8	deg_C

EXP 01--SCAN 020--11-26-19-54-36
[redacted] Thermal Survey/Mueler"

ch 01	55.8	deg_C
ch 02	58.5	deg_C
ch 03	53.9	deg_C
ch 04	54.1	deg_C
ch 05	53.6	deg_C
ch 06	54.6	deg_C
ch 07	52.5	deg_C
ch 08	54.2	deg_C
ch 09	52.1	deg_C
ch 10	53.3	deg_C
ch 11	23.2	deg_C
ch 12	22.6	deg_C
ch 13	22.2	deg_C
ch 14	24.3	deg_C
ch 15	23.4	deg_C
ch 16	53.9	deg_C
ch 17	54.0	deg_C
ch 18	53.2	deg_C
ch 19	53.0	deg_C

EXP 01--SCAN 024--11-26-19-59-36
[redacted] Thermal Survey/Mueler"

ch 01	57.4	deg_C
ch 02	59.0	deg_C
ch 03	56.3	deg_C
ch 04	55.3	deg_C
ch 05	56.0	deg_C
ch 06	55.5	deg_C
ch 07	55.4	deg_C
ch 08	57.0	deg_C
ch 09	55.1	deg_C
ch 10	55.9	deg_C
ch 11	23.1	deg_C
ch 12	22.5	deg_C
ch 13	22.1	deg_C
ch 14	24.0	deg_C
ch 15	23.2	deg_C
ch 16	55.3	deg_C
ch 17	55.4	deg_C
ch 18	55.8	deg_C
ch 19	55.7	deg_C

EXP 01--SCAN 028--11-26-20-02-36
[redacted] Thermal Survey/Mueler"

ch 01	58.4	deg_C
ch 02	58.6	deg_C
ch 03	57.8	deg_C
ch 04	57.8	deg_C
ch 05	57.5	deg_C
ch 06	58.0	deg_C
ch 07	57.2	deg_C
ch 08	58.7	deg_C
ch 09	56.9	deg_C
ch 10	57.5	deg_C
ch 11	22.8	deg_C
ch 12	22.4	deg_C
ch 13	22.1	deg_C
ch 14	23.7	deg_C
ch 15	23.0	deg_C
ch 16	57.8	deg_C
ch 17	57.8	deg_C
ch 18	57.5	deg_C
ch 19	57.4	deg_C

EXP 01--SCAN 032--11-26-20-06-36
[redacted] Thermal Survey/Mueler"

ch 01	59.1	deg_C
ch 02	59.8	deg_C
ch 03	58.7	deg_C
ch 04	59.7	deg_C
ch 05	58.5	deg_C
ch 06	58.8	deg_C
ch 07	58.4	deg_C
ch 08	59.8	deg_C
ch 09	59.1	deg_C
ch 10	58.6	deg_C
ch 11	22.7	deg_C
ch 12	22.5	deg_C
ch 13	22.1	deg_C
ch 14	23.6	deg_C
ch 15	23.2	deg_C
ch 16	59.7	deg_C
ch 17	58.8	deg_C
ch 18	58.5	deg_C
ch 19	58.5	deg_C

20:10 LEVEL 0; TURN UUT PWR ON

EXP 01--SCAN 036--11:25:20:10:36
[redacted] Thermal Survey/Mueler"

ch: 01	59.5	deg_C
ch: 02	59.6	deg_C
ch: 03	59.3	deg_C
ch: 04	59.3	deg_C
ch: 05	59.1	deg_C
ch: 06	59.4	deg_C
ch: 07	59.1	deg_C
ch: 08	60.5	deg_C
ch: 09	59.9	deg_C
ch: 10	59.2	deg_C
ch: 11	22.8	deg_C
ch: 12	22.7	deg_C
ch: 13	22.3	deg_C
ch: 14	23.6	deg_C
ch: 15	23.5	deg_C
ch: 16	59.3	deg_C
ch: 17	59.4	deg_C
ch: 18	59.2	deg_C
ch: 19	59.2	deg_C

EXP 01--SCAN 048--11:25:20:22:35
[redacted] Thermal Survey/Mueler"

ch: 01	53.6	deg_C
ch: 02	60.0	deg_C
ch: 03	69.3	deg_C
ch: 04	55.9	deg_C
ch: 05	57.9	deg_C
ch: 06	65.3	deg_C
ch: 07	69.5	deg_C
ch: 08	71.4	deg_C
ch: 09	72.9	deg_C
ch: 10	71.2	deg_C
ch: 11	22.7	deg_C
ch: 12	22.4	deg_C
ch: 13	22.1	deg_C
ch: 14	23.3	deg_C
ch: 15	22.9	deg_C
ch: 16	75.9	deg_C
ch: 17	79.4	deg_C
ch: 18	57.4	deg_C
ch: 19	67.9	deg_C

EXP 01--SCAN 060--11:25:20:34:35
[redacted] Thermal Survey/Mueler"

ch: 01	55.1	deg_C
ch: 02	60.1	deg_C
ch: 03	70.7	deg_C
ch: 04	59.2	deg_C
ch: 05	70.2	deg_C
ch: 06	67.3	deg_C
ch: 07	72.4	deg_C
ch: 08	74.1	deg_C
ch: 09	75.9	deg_C
ch: 10	73.9	deg_C
ch: 11	22.4	deg_C
ch: 12	22.3	deg_C
ch: 13	22.0	deg_C
ch: 14	23.3	deg_C
ch: 15	22.9	deg_C
ch: 16	78.3	deg_C
ch: 17	80.8	deg_C
ch: 18	70.0	deg_C
ch: 19	70.7	deg_C

EXP 01--SCAN 040--11:25:20:14:35
[redacted] Thermal Survey/Mueler"

ch: 01	58.3	deg_C
ch: 02	59.9	deg_C
ch: 03	62.2	deg_C
ch: 04	60.9	deg_C
ch: 05	61.8	deg_C
ch: 06	60.8	deg_C
ch: 07	64.4	deg_C
ch: 08	66.7	deg_C
ch: 09	63.9	deg_C
ch: 10	64.2	deg_C
ch: 11	22.7	deg_C
ch: 12	22.5	deg_C
ch: 13	22.1	deg_C
ch: 14	23.4	deg_C
ch: 15	23.2	deg_C
ch: 16	67.2	deg_C
ch: 17	71.1	deg_C
ch: 18	51.7	deg_C
ch: 19	62.0	deg_C

EXP 01--SCAN 052--11:25:20:26:35
[redacted] Thermal Survey/Mueler"

ch: 01	64.4	deg_C
ch: 02	60.1	deg_C
ch: 03	69.6	deg_C
ch: 04	57.0	deg_C
ch: 05	69.0	deg_C
ch: 06	66.3	deg_C
ch: 07	71.0	deg_C
ch: 08	72.9	deg_C
ch: 09	74.4	deg_C
ch: 10	72.6	deg_C
ch: 11	22.6	deg_C
ch: 12	22.4	deg_C
ch: 13	22.0	deg_C
ch: 14	23.3	deg_C
ch: 15	23.1	deg_C
ch: 16	77.1	deg_C
ch: 17	79.7	deg_C
ch: 18	59.7	deg_C
ch: 19	69.3	deg_C

EXP 01--SCAN 064--11:25:20:38:35
[redacted] Thermal Survey/Mueler"

ch: 01	65.2	deg_C
ch: 02	60.2	deg_C
ch: 03	70.9	deg_C
ch: 04	59.4	deg_C
ch: 05	70.5	deg_C
ch: 06	67.5	deg_C
ch: 07	72.8	deg_C
ch: 08	74.4	deg_C
ch: 09	76.2	deg_C
ch: 10	74.2	deg_C
ch: 11	22.6	deg_C
ch: 12	22.3	deg_C
ch: 13	21.9	deg_C
ch: 14	23.2	deg_C
ch: 15	23.2	deg_C
ch: 16	78.6	deg_C
ch: 17	81.1	deg_C
ch: 18	70.3	deg_C
ch: 19	71.0	deg_C

EXP 01--SCAN 044--11:25:20:18:35
[redacted] Thermal Survey/Mueler"

ch: 01	62.3	deg_C
ch: 02	59.8	deg_C
ch: 03	66.1	deg_C
ch: 04	64.0	deg_C
ch: 05	66.7	deg_C
ch: 06	63.6	deg_C
ch: 07	67.4	deg_C
ch: 08	69.2	deg_C
ch: 09	69.9	deg_C
ch: 10	68.7	deg_C
ch: 11	22.7	deg_C
ch: 12	22.4	deg_C
ch: 13	22.8	deg_C
ch: 14	23.4	deg_C
ch: 15	23.8	deg_C
ch: 16	73.3	deg_C
ch: 17	76.2	deg_C
ch: 18	65.2	deg_C
ch: 19	65.6	deg_C

EXP 01--SCAN 056--11:25:20:30:36
[redacted] Thermal Survey/Mueler"

ch: 01	64.8	deg_C
ch: 02	60.8	deg_C
ch: 03	70.2	deg_C
ch: 04	57.7	deg_C
ch: 05	69.8	deg_C
ch: 06	66.9	deg_C
ch: 07	71.9	deg_C
ch: 08	73.6	deg_C
ch: 09	75.3	deg_C
ch: 10	73.4	deg_C
ch: 11	22.5	deg_C
ch: 12	22.4	deg_C
ch: 13	22.0	deg_C
ch: 14	23.3	deg_C
ch: 15	23.8	deg_C
ch: 16	77.9	deg_C
ch: 17	80.4	deg_C
ch: 18	69.5	deg_C
ch: 19	70.2	deg_C

START DATA AVG.

EXP 01--SCAN 068--11 25 20 42 35
[redacted] Thermal Survey/Mueler"

ch 01	65.4	deg_C
ch 02	60.2	deg_C
ch 03	71.1	deg_C
ch 04	58.5	deg_C
ch 05	70.7	deg_C
ch 06	67.6	deg_C
ch 07	73.0	deg_C
ch 08	74.5	deg_C
ch 09	76.4	deg_C
ch 10	74.3	deg_C
ch 11	22.7	deg_C
ch 12	22.4	deg_C
ch 13	22.0	deg_C
ch 14	23.2	deg_C
ch 15	22.8	deg_C
ch 16	76.8	deg_C
ch 17	81.2	deg_C
ch 18	70.4	deg_C
ch 19	71.2	deg_C

EXP 01--SCAN 072--11 26 20 46 36
[redacted] Thermal Survey/Mueller"

ch	01	65.4	deg_C
ch	02	60.3	deg_C
ch	03	71.2	deg_C
ch	04	68.7	deg_C
ch	05	70.8	deg_C
ch	06	67.7	deg_C
ch	07	73.1	deg_C
ch	08	74.7	deg_C
ch	09	75.5	deg_C
ch	10	74.5	deg_C
ch	11	22.7	deg_C
ch	12	22.4	deg_C
ch	13	21.9	deg_C
ch	14	23.2	deg_C
ch	15	23.0	deg_C
ch	16	78.8	deg_C
ch	17	81.3	deg_C
ch	18	70.6	deg_C
ch	19	71.3	deg_C

EXP 01--SCAN 084--11 26 20 58 36
[redacted] Thermal Survey/Mueller"

ch	01	65.6	deg_C
ch	02	60.3	deg_C
ch	03	71.3	deg_C
ch	04	68.6	deg_C
ch	05	71.0	deg_C
ch	06	67.8	deg_C
ch	07	73.2	deg_C
ch	08	74.9	deg_C
ch	09	76.7	deg_C
ch	10	74.6	deg_C
ch	11	22.6	deg_C
ch	12	22.3	deg_C
ch	13	22.0	deg_C
ch	14	23.2	deg_C
ch	15	23.0	deg_C
ch	16	78.0	deg_C
ch	17	81.5	deg_C
ch	18	70.7	deg_C
ch	19	71.5	deg_C

EXP 01--SCAN 096--11 26 21 10 36
[redacted] Thermal Survey/Mueller"

ch	01	65.6	deg_C
ch	02	60.3	deg_C
ch	03	71.4	deg_C
ch	04	68.2	deg_C
ch	05	71.0	deg_C
ch	06	67.9	deg_C
ch	07	73.4	deg_C
ch	08	75.0	deg_C
ch	09	76.9	deg_C
ch	10	74.7	deg_C
ch	11	22.4	deg_C
ch	12	22.3	deg_C
ch	13	22.0	deg_C
ch	14	23.2	deg_C
ch	15	23.1	deg_C
ch	16	79.1	deg_C
ch	17	81.6	deg_C
ch	18	70.8	deg_C
ch	19	71.6	deg_C

EXP 01--SCAN 076--11 26 20 50 36
[redacted] Thermal Survey/Mueller"

ch	01	65.5	deg_C
ch	02	60.2	deg_C
ch	03	71.2	deg_C
ch	04	68.8	deg_C
ch	05	70.9	deg_C
ch	06	67.8	deg_C
ch	07	73.2	deg_C
ch	08	74.8	deg_C
ch	09	76.5	deg_C
ch	10	74.5	deg_C
ch	11	22.5	deg_C
ch	12	22.4	deg_C
ch	13	22.1	deg_C
ch	14	23.2	deg_C
ch	15	23.2	deg_C
ch	16	78.9	deg_C
ch	17	81.4	deg_C
ch	18	70.6	deg_C
ch	19	71.4	deg_C

EXP 01--SCAN 088--11 26 21 02 36
[redacted] Thermal Survey/Mueller"

ch	01	65.5	deg_C
ch	02	60.3	deg_C
ch	03	71.3	deg_C
ch	04	68.8	deg_C
ch	05	71.0	deg_C
ch	06	67.9	deg_C
ch	07	73.6	deg_C
ch	08	74.9	deg_C
ch	09	76.8	deg_C
ch	10	74.8	deg_C
ch	11	22.7	deg_C
ch	12	22.3	deg_C
ch	13	21.9	deg_C
ch	14	23.1	deg_C
ch	15	22.9	deg_C
ch	16	78.1	deg_C
ch	17	81.5	deg_C
ch	18	70.7	deg_C
ch	19	71.4	deg_C

EXP 01--SCAN 100--11 26 21 14 36
[redacted] Thermal Survey/Mueller"

ch	01	65.6	deg_C
ch	02	60.4	deg_C
ch	03	71.4	deg_C
ch	04	68.8	deg_C
ch	05	71.0	deg_C
ch	06	68.0	deg_C
ch	07	73.6	deg_C
ch	08	75.0	deg_C
ch	09	76.8	deg_C
ch	10	74.7	deg_C
ch	11	22.5	deg_C
ch	12	22.3	deg_C
ch	13	21.9	deg_C
ch	14	23.1	deg_C
ch	15	22.7	deg_C
ch	16	78.1	deg_C
ch	17	81.6	deg_C
ch	18	70.8	deg_C
ch	19	71.5	deg_C

EXP 01--SCAN 080--11 26 20 54 36
[redacted] Thermal Survey/Mueller"

ch	01	65.5	deg_C
ch	02	60.3	deg_C
ch	03	71.3	deg_C
ch	04	68.8	deg_C
ch	05	70.9	deg_C
ch	06	67.9	deg_C
ch	07	73.2	deg_C
ch	08	74.9	deg_C
ch	09	76.7	deg_C
ch	10	74.6	deg_C
ch	11	22.5	deg_C
ch	12	22.3	deg_C
ch	13	21.9	deg_C
ch	14	23.2	deg_C
ch	15	22.7	deg_C
ch	16	78.9	deg_C
ch	17	81.4	deg_C
ch	18	70.7	deg_C
ch	19	71.4	deg_C

EXP 01--SCAN 092--11 26 21 06 36
[redacted] Thermal Survey/Mueller"

ch	01	65.6	deg_C
ch	02	60.3	deg_C
ch	03	71.4	deg_C
ch	04	68.8	deg_C
ch	05	71.0	deg_C
ch	06	68.0	deg_C
ch	07	73.6	deg_C
ch	08	75.0	deg_C
ch	09	76.8	deg_C
ch	10	74.8	deg_C
ch	11	22.6	deg_C
ch	12	22.4	deg_C
ch	13	22.0	deg_C
ch	14	23.1	deg_C
ch	15	22.8	deg_C
ch	16	79.1	deg_C
ch	17	81.6	deg_C
ch	18	70.7	deg_C
ch	19	71.5	deg_C

EXP 01--SCAN 104--11 26 21 18 36
[redacted] Thermal Survey/Mueller"

ch	01	65.6	deg_C
ch	02	60.3	deg_C
ch	03	71.5	deg_C
ch	04	68.8	deg_C
ch	05	71.1	deg_C
ch	06	68.0	deg_C
ch	07	73.8	deg_C
ch	08	75.0	deg_C
ch	09	76.9	deg_C
ch	10	74.8	deg_C
ch	11	22.6	deg_C
ch	12	22.3	deg_C
ch	13	21.9	deg_C
ch	14	23.1	deg_C
ch	15	23.0	deg_C
ch	16	79.1	deg_C
ch	17	81.6	deg_C
ch	18	70.8	deg_C
ch	19	71.5	deg_C

EXP 01--SCAN 108--11 26 21 22 36
[redacted] Thermal Survey/Mueller

ch 01	65.6	deg_C
ch 02	60.3	deg_C
ch 03	71.4	deg_C
ch 04	68.9	deg_C
ch 05	71.1	deg_C
ch 06	66.0	deg_C
ch 07	73.4	deg_C
ch 08	75.0	deg_C
ch 09	76.9	deg_C
ch 10	74.7	deg_C
ch 11	22.7	deg_C
ch 12	22.3	deg_C
ch 13	22.0	deg_C
ch 14	23.1	deg_C
ch 15	22.9	deg_C
ch 16	79.1	deg_C
ch 17	81.6	deg_C
ch 18	70.9	deg_C
ch 19	71.5	deg_C

EXP 01--SCAN 109--11 26 21 34 36
[redacted] Thermal Survey/Mueller

ch 01	65.7	deg_C
ch 02	60.3	deg_C
ch 03	71.4	deg_C
ch 04	68.9	deg_C
ch 05	71.1	deg_C
ch 06	68.0	deg_C
ch 07	73.4	deg_C
ch 08	75.0	deg_C
ch 09	76.9	deg_C
ch 10	74.7	deg_C
ch 11	22.8	deg_C
ch 12	22.4	deg_C
ch 13	22.0	deg_C
ch 14	23.1	deg_C
ch 15	23.0	deg_C
ch 16	79.1	deg_C
ch 17	81.6	deg_C
ch 18	70.9	deg_C
ch 19	71.5	deg_C

EXP 01--SCAN 132--11 26 21 46 36
[redacted] Thermal Survey/Mueller

ch 01	65.6	deg_C
ch 02	60.4	deg_C
ch 03	71.4	deg_C
ch 04	68.8	deg_C
ch 05	71.0	deg_C
ch 06	67.9	deg_C
ch 07	73.4	deg_C
ch 08	75.0	deg_C
ch 09	76.8	deg_C
ch 10	74.7	deg_C
ch 11	22.5	deg_C
ch 12	22.4	deg_C
ch 13	21.9	deg_C
ch 14	23.1	deg_C
ch 15	23.0	deg_C
ch 16	79.1	deg_C
ch 17	81.6	deg_C
ch 18	70.7	deg_C
ch 19	71.5	deg_C

EXP 01--SCAN 112--11 26 21 26 36
[redacted] Thermal Survey/Mueller

ch 01	65.7	deg_C
ch 02	60.3	deg_C
ch 03	71.4	deg_C
ch 04	68.9	deg_C
ch 05	71.1	deg_C
ch 06	68.0	deg_C
ch 07	73.5	deg_C
ch 08	75.0	deg_C
ch 09	76.9	deg_C
ch 10	74.7	deg_C
ch 11	22.5	deg_C
ch 12	22.3	deg_C
ch 13	22.0	deg_C
ch 14	23.1	deg_C
ch 15	23.1	deg_C
ch 16	79.1	deg_C
ch 17	81.6	deg_C
ch 18	70.8	deg_C
ch 19	71.5	deg_C

EXP 01--SCAN 124--11 26 21 38 36
[redacted] Thermal Survey/Mueller

ch 01	65.6	deg_C
ch 02	60.4	deg_C
ch 03	71.4	deg_C
ch 04	68.9	deg_C
ch 05	71.0	deg_C
ch 06	67.9	deg_C
ch 07	73.4	deg_C
ch 08	75.0	deg_C
ch 09	76.8	deg_C
ch 10	74.7	deg_C
ch 11	22.5	deg_C
ch 12	22.2	deg_C
ch 13	21.8	deg_C
ch 14	23.1	deg_C
ch 15	22.7	deg_C
ch 16	79.1	deg_C
ch 17	81.6	deg_C
ch 18	70.7	deg_C
ch 19	71.5	deg_C

EXP 01--SCAN 136--11 26 21 50 36
[redacted] Thermal Survey/Mueller

ch 01	65.6	deg_C
ch 02	60.4	deg_C
ch 03	71.4	deg_C
ch 04	68.8	deg_C
ch 05	71.0	deg_C
ch 06	68.0	deg_C
ch 07	73.4	deg_C
ch 08	75.0	deg_C
ch 09	76.6	deg_C
ch 10	74.7	deg_C
ch 11	22.3	deg_C
ch 12	22.3	deg_C
ch 13	22.0	deg_C
ch 14	23.1	deg_C
ch 15	23.1	deg_C
ch 16	79.1	deg_C
ch 17	81.6	deg_C
ch 18	70.7	deg_C
ch 19	71.5	deg_C

EXP 01--SCAN 115--11 26 21 30 36
[redacted] Thermal Survey/Mueller

ch 01	65.7	deg_C
ch 02	60.5	deg_C
ch 03	71.4	deg_C
ch 04	68.9	deg_C
ch 05	71.1	deg_C
ch 06	68.0	deg_C
ch 07	73.4	deg_C
ch 08	75.0	deg_C
ch 09	76.9	deg_C
ch 10	74.7	deg_C
ch 11	22.3	deg_C
ch 12	22.3	deg_C
ch 13	21.9	deg_C
ch 14	23.1	deg_C
ch 15	23.1	deg_C
ch 16	79.1	deg_C
ch 17	81.6	deg_C
ch 18	70.9	deg_C
ch 19	71.6	deg_C

EXP 01--SCAN 128--11 26 21 42 36
[redacted] Thermal Survey/Mueller

ch 01	65.6	deg_C
ch 02	60.3	deg_C
ch 03	71.4	deg_C
ch 04	68.8	deg_C
ch 05	71.0	deg_C
ch 06	68.0	deg_C
ch 07	73.4	deg_C
ch 08	75.0	deg_C
ch 09	76.8	deg_C
ch 10	74.7	deg_C
ch 11	22.5	deg_C
ch 12	22.3	deg_C
ch 13	21.9	deg_C
ch 14	23.1	deg_C
ch 15	23.0	deg_C
ch 16	79.1	deg_C
ch 17	81.6	deg_C
ch 18	70.7	deg_C
ch 19	71.5	deg_C

EXP 01--SCAN 140--11 26 21 54 36
[redacted] Thermal Survey/Mueller

ch 01	65.6	deg_C
ch 02	60.4	deg_C
ch 03	71.4	deg_C
ch 04	68.9	deg_C
ch 05	71.0	deg_C
ch 06	68.0	deg_C
ch 07	73.4	deg_C
ch 08	75.0	deg_C
ch 09	76.6	deg_C
ch 10	74.7	deg_C
ch 11	22.4	deg_C
ch 12	22.3	deg_C
ch 13	22.0	deg_C
ch 14	23.1	deg_C
ch 15	23.1	deg_C
ch 16	79.1	deg_C
ch 17	81.6	deg_C
ch 18	70.7	deg_C
ch 19	71.5	deg_C

EXP 01--SCAN 144--11 26 21 59 36
[redacted] Thermal Survey/Mueller"

ch 01	65.7	deg_C
ch 02	60.4	deg_C
ch 03	71.4	deg_C
ch 04	68.9	deg_C
ch 05	71.0	deg_C
ch 06	68.9	deg_C
ch 07	73.4	deg_C
ch 08	75.0	deg_C
ch 09	76.6	deg_C
ch 10	74.7	deg_C
ch 11	22.5	deg_C
ch 12	22.2	deg_C
ch 13	21.9	deg_C
ch 14	23.1	deg_C
ch 15	23.0	deg_C
ch 16	79.1	deg_C
ch 17	81.5	deg_C
ch 18	70.8	deg_C
ch 19	71.5	deg_C

EXP 01--SCAN 155--11 26 22 10 36
[redacted] Thermal Survey/Mueller"

ch 01	65.7	deg_C
ch 02	60.4	deg_C
ch 03	71.5	deg_C
ch 04	68.9	deg_C
ch 05	71.1	deg_C
ch 06	68.0	deg_C
ch 07	73.5	deg_C
ch 08	75.0	deg_C
ch 09	77.0	deg_C
ch 10	74.6	deg_C
ch 11	22.3	deg_C
ch 12	22.3	deg_C
ch 13	21.9	deg_C
ch 14	23.0	deg_C
ch 15	22.9	deg_C
ch 16	79.2	deg_C
ch 17	81.5	deg_C
ch 18	70.9	deg_C
ch 19	71.6	deg_C

EXP 01--SCAN 158--11 26 22 22 36
[redacted] Thermal Survey/Mueller"

ch 01	70.9	deg_C
ch 02	67.3	deg_C
ch 03	75.9	deg_C
ch 04	73.3	deg_C
ch 05	75.3	deg_C
ch 06	72.5	deg_C
ch 07	77.3	deg_C
ch 08	78.6	deg_C
ch 09	80.6	deg_C
ch 10	78.9	deg_C
ch 11	22.6	deg_C
ch 12	22.4	deg_C
ch 13	21.9	deg_C
ch 14	23.5	deg_C
ch 15	22.9	deg_C
ch 16	83.8	deg_C
ch 17	86.6	deg_C
ch 18	74.8	deg_C
ch 19	75.4	deg_C

22:14 RAMP TO +69°C (+78°C COMPONENT) LEVEL 1

EXP 01--SCAN 148--11 26 22 02 36
[redacted] Thermal Survey/Mueller"

ch 01	65.7	deg_C
ch 02	60.4	deg_C
ch 03	71.4	deg_C
ch 04	68.9	deg_C
ch 05	71.0	deg_C
ch 06	68.9	deg_C
ch 07	73.4	deg_C
ch 08	75.0	deg_C
ch 09	76.8	deg_C
ch 10	74.7	deg_C
ch 11	22.5	deg_C
ch 12	22.3	deg_C
ch 13	22.0	deg_C
ch 14	23.1	deg_C
ch 15	22.9	deg_C
ch 16	79.1	deg_C
ch 17	81.6	deg_C
ch 18	70.7	deg_C
ch 19	71.5	deg_C

EXP 01--SCAN 160--11 26 22 14 36
[redacted] Thermal Survey/Mueller"

ch 01	65.6	deg_C
ch 02	60.4	deg_C
ch 03	71.5	deg_C
ch 04	68.8	deg_C
ch 05	71.1	deg_C
ch 06	68.2	deg_C
ch 07	73.5	deg_C
ch 08	75.1	deg_C
ch 09	77.0	deg_C
ch 10	74.6	deg_C
ch 11	22.5	deg_C
ch 12	22.3	deg_C
ch 13	21.8	deg_C
ch 14	23.0	deg_C
ch 15	22.8	deg_C
ch 16	79.2	deg_C
ch 17	81.5	deg_C
ch 18	70.9	deg_C
ch 19	71.6	deg_C

END DATA AVG.

EXP 01--SCAN 172--11 26 22 26 36
[redacted] Thermal Survey/Mueller"

ch 01	72.0	deg_C
ch 02	67.7	deg_C
ch 03	77.4	deg_C
ch 04	74.7	deg_C
ch 05	76.8	deg_C
ch 06	73.9	deg_C
ch 07	78.3	deg_C
ch 08	80.2	deg_C
ch 09	82.3	deg_C
ch 10	80.5	deg_C
ch 11	22.6	deg_C
ch 12	22.4	deg_C
ch 13	22.1	deg_C
ch 14	23.5	deg_C
ch 15	23.0	deg_C
ch 16	85.2	deg_C
ch 17	88.0	deg_C
ch 18	76.3	deg_C
ch 19	77.0	deg_C

EXP 01--SCAN 152--11 26 22 06 36
[redacted] Thermal Survey/Mueller"

ch 01	65.7	deg_C
ch 02	60.5	deg_C
ch 03	71.4	deg_C
ch 04	68.8	deg_C
ch 05	71.0	deg_C
ch 06	68.9	deg_C
ch 07	73.4	deg_C
ch 08	75.0	deg_C
ch 09	76.9	deg_C
ch 10	74.8	deg_C
ch 11	22.4	deg_C
ch 12	22.2	deg_C
ch 13	21.9	deg_C
ch 14	23.1	deg_C
ch 15	22.8	deg_C
ch 16	79.1	deg_C
ch 17	81.5	deg_C
ch 18	70.8	deg_C
ch 19	71.5	deg_C

EXP 01--SCAN 164--11 26 22 18 36
[redacted] Thermal Survey/Mueller"

ch 01	68.3	deg_C
ch 02	65.4	deg_C
ch 03	73.7	deg_C
ch 04	71.3	deg_C
ch 05	73.1	deg_C
ch 06	70.6	deg_C
ch 07	75.0	deg_C
ch 08	76.5	deg_C
ch 09	78.2	deg_C
ch 10	76.5	deg_C
ch 11	22.8	deg_C
ch 12	22.4	deg_C
ch 13	22.0	deg_C
ch 14	23.6	deg_C
ch 15	23.0	deg_C
ch 16	81.1	deg_C
ch 17	84.1	deg_C
ch 18	72.7	deg_C
ch 19	73.2	deg_C

EXP 01--SCAN 176--11 26 22 30 36
[redacted] Thermal Survey/Mueller"

ch 01	72.6	deg_C
ch 02	67.7	deg_C
ch 03	78.3	deg_C
ch 04	75.6	deg_C
ch 05	77.6	deg_C
ch 06	74.7	deg_C
ch 07	79.3	deg_C
ch 08	81.2	deg_C
ch 09	83.5	deg_C
ch 10	81.5	deg_C
ch 11	22.6	deg_C
ch 12	22.3	deg_C
ch 13	21.9	deg_C
ch 14	23.4	deg_C
ch 15	23.0	deg_C
ch 16	85.2	deg_C
ch 17	88.9	deg_C
ch 18	77.3	deg_C
ch 19	78.1	deg_C

START DATA AVG.

EXP 01--SCAN 180--11 26 22 34 36
[redacted] Thermal Survey/Mueller

ch 01	73.1	deg_C
ch 02	68.0	deg_C
ch 03	78.9	deg_C
ch 04	75.2	deg_C
ch 05	78.4	deg_C
ch 06	75.3	deg_C
ch 07	80.5	deg_C
ch 08	81.9	deg_C
ch 09	84.3	deg_C
ch 10	82.2	deg_C
ch 11	22.5	deg_C
ch 12	22.4	deg_C
ch 13	22.0	deg_C
ch 14	23.4	deg_C
ch 15	23.0	deg_C
ch 16	85.7	deg_C
ch 17	88.5	deg_C
ch 18	78.0	deg_C
ch 19	78.7	deg_C

EXP 01--SCAN 192--11 26 22 46 36
[redacted] Thermal Survey/Mueller

ch 01	73.5	deg_C
ch 02	68.0	deg_C
ch 03	78.7	deg_C
ch 04	76.8	deg_C
ch 05	78.2	deg_C
ch 06	75.9	deg_C
ch 07	81.5	deg_C
ch 08	82.7	deg_C
ch 09	85.2	deg_C
ch 10	82.9	deg_C
ch 11	22.7	deg_C
ch 12	22.3	deg_C
ch 13	21.8	deg_C
ch 14	23.3	deg_C
ch 15	22.9	deg_C
ch 16	87.4	deg_C
ch 17	89.2	deg_C
ch 18	78.7	deg_C
ch 19	78.6	deg_C

EXP 01--SCAN 204--11 26 22 58 36
[redacted] Thermal Survey/Mueller

ch 01	73.8	deg_C
ch 02	68.1	deg_C
ch 03	78.9	deg_C
ch 04	77.1	deg_C
ch 05	78.4	deg_C
ch 06	75.1	deg_C
ch 07	81.5	deg_C
ch 08	83.0	deg_C
ch 09	85.6	deg_C
ch 10	83.1	deg_C
ch 11	22.6	deg_C
ch 12	22.3	deg_C
ch 13	21.9	deg_C
ch 14	23.2	deg_C
ch 15	23.0	deg_C
ch 16	87.6	deg_C
ch 17	90.4	deg_C
ch 18	78.8	deg_C
ch 19	78.9	deg_C

EXP 01--SCAN 184--11 26 22 38 36
[redacted] Thermal Survey/Mueller

ch 01	73.3	deg_C
ch 02	68.0	deg_C
ch 03	78.3	deg_C
ch 04	76.5	deg_C
ch 05	78.8	deg_C
ch 06	75.6	deg_C
ch 07	81.1	deg_C
ch 08	82.3	deg_C
ch 09	84.7	deg_C
ch 10	82.5	deg_C
ch 11	22.5	deg_C
ch 12	22.4	deg_C
ch 13	21.9	deg_C
ch 14	23.4	deg_C
ch 15	23.0	deg_C
ch 16	87.1	deg_C
ch 17	89.9	deg_C
ch 18	78.3	deg_C
ch 19	79.2	deg_C

EXP 01--SCAN 196--11 26 22 50 36
[redacted] Thermal Survey/Mueller

ch 01	73.5	deg_C
ch 02	68.0	deg_C
ch 03	78.7	deg_C
ch 04	77.0	deg_C
ch 05	78.3	deg_C
ch 06	76.0	deg_C
ch 07	81.6	deg_C
ch 08	82.9	deg_C
ch 09	85.3	deg_C
ch 10	83.0	deg_C
ch 11	22.6	deg_C
ch 12	22.3	deg_C
ch 13	21.8	deg_C
ch 14	23.3	deg_C
ch 15	23.1	deg_C
ch 16	87.5	deg_C
ch 17	90.3	deg_C
ch 18	78.8	deg_C
ch 19	78.7	deg_C

EXP 01--SCAN 208--11 26 23 02 36
[redacted] Thermal Survey/Mueller

ch 01	73.5	deg_C
ch 02	68.1	deg_C
ch 03	78.8	deg_C
ch 04	77.1	deg_C
ch 05	78.5	deg_C
ch 06	76.1	deg_C
ch 07	81.5	deg_C
ch 08	83.0	deg_C
ch 09	85.7	deg_C
ch 10	83.2	deg_C
ch 11	22.6	deg_C
ch 12	22.2	deg_C
ch 13	21.9	deg_C
ch 14	23.2	deg_C
ch 15	22.9	deg_C
ch 16	87.7	deg_C
ch 17	90.4	deg_C
ch 18	78.9	deg_C
ch 19	78.9	deg_C

EXP 01--SCAN 188--11 26 22 42 36
[redacted] Thermal Survey/Mueller

ch 01	73.4	deg_C
ch 02	68.9	deg_C
ch 03	79.5	deg_C
ch 04	76.7	deg_C
ch 05	79.0	deg_C
ch 06	75.8	deg_C
ch 07	81.3	deg_C
ch 08	82.6	deg_C
ch 09	85.0	deg_C
ch 10	82.8	deg_C
ch 11	22.5	deg_C
ch 12	22.1	deg_C
ch 13	21.8	deg_C
ch 14	23.3	deg_C
ch 15	22.7	deg_C
ch 16	87.3	deg_C
ch 17	90.1	deg_C
ch 18	78.6	deg_C
ch 19	79.4	deg_C

EXP 01--SCAN 200--11 26 22 54 36
[redacted] Thermal Survey/Mueller

ch 01	73.7	deg_C
ch 02	68.2	deg_C
ch 03	78.8	deg_C
ch 04	77.0	deg_C
ch 05	79.3	deg_C
ch 06	76.1	deg_C
ch 07	81.7	deg_C
ch 08	82.9	deg_C
ch 09	85.4	deg_C
ch 10	83.1	deg_C
ch 11	22.7	deg_C
ch 12	22.2	deg_C
ch 13	21.9	deg_C
ch 14	23.3	deg_C
ch 15	22.8	deg_C
ch 16	87.6	deg_C
ch 17	90.3	deg_C
ch 18	78.9	deg_C
ch 19	79.8	deg_C

EXP 01--SCAN 212--11 26 23 06 36
[redacted] Thermal Survey/Mueller

ch 01	73.8	deg_C
ch 02	68.2	deg_C
ch 03	78.9	deg_C
ch 04	77.1	deg_C
ch 05	78.5	deg_C
ch 06	76.2	deg_C
ch 07	82.0	deg_C
ch 08	83.1	deg_C
ch 09	85.7	deg_C
ch 10	83.2	deg_C
ch 11	22.6	deg_C
ch 12	22.3	deg_C
ch 13	21.9	deg_C
ch 14	23.2	deg_C
ch 15	22.8	deg_C
ch 16	87.7	deg_C
ch 17	90.5	deg_C
ch 18	78.9	deg_C
ch 19	79.9	deg_C

EXP 01--SCAN 215--11 26 23 10 36
[redacted] Thermal Survey/Mueller"

ch 01	73.6	deg_C
ch 02	68.1	deg_C
ch 03	80.0	deg_C
ch 04	77.1	deg_C
ch 05	79.6	deg_C
ch 06	76.2	deg_C
ch 07	81.9	deg_C
ch 08	83.1	deg_C
ch 09	85.8	deg_C
ch 10	83.4	deg_C
ch 11	22.4	deg_C
ch 12	22.2	deg_C
ch 13	21.9	deg_C
ch 14	23.2	deg_C
ch 15	22.8	deg_C
ch 16	87.7	deg_C
ch 17	90.5	deg_C
ch 18	79.0	deg_C
ch 19	79.9	deg_C

EXP 01--SCAN 228--11 26 23 22 36
[redacted] Thermal Survey/Mueller"

ch 01	73.6	deg_C
ch 02	68.1	deg_C
ch 03	80.0	deg_C
ch 04	77.2	deg_C
ch 05	79.5	deg_C
ch 06	76.2	deg_C
ch 07	82.5	deg_C
ch 08	83.1	deg_C
ch 09	85.8	deg_C
ch 10	83.0	deg_C
ch 11	22.8	deg_C
ch 12	22.3	deg_C
ch 13	21.9	deg_C
ch 14	23.2	deg_C
ch 15	22.9	deg_C
ch 16	87.8	deg_C
ch 17	90.5	deg_C
ch 18	79.0	deg_C
ch 19	79.9	deg_C

EXP 01--SCAN 240--11 26 23 34 36
[redacted] Thermal Survey/Mueller"

ch 01	73.9	deg_C
ch 02	68.3	deg_C
ch 03	80.1	deg_C
ch 04	77.2	deg_C
ch 05	79.6	deg_C
ch 06	76.3	deg_C
ch 07	82.8	deg_C
ch 08	83.2	deg_C
ch 09	85.9	deg_C
ch 10	83.4	deg_C
ch 11	22.5	deg_C
ch 12	22.3	deg_C
ch 13	22.6	deg_C
ch 14	23.2	deg_C
ch 15	22.9	deg_C
ch 16	87.6	deg_C
ch 17	90.5	deg_C
ch 18	79.1	deg_C
ch 19	80.0	deg_C

EXP 01--SCAN 220--11 26 23 14 36
[redacted] Thermal Survey/Mueller"

ch 01	73.6	deg_C
ch 02	68.1	deg_C
ch 03	80.0	deg_C
ch 04	77.1	deg_C
ch 05	79.5	deg_C
ch 06	76.2	deg_C
ch 07	82.0	deg_C
ch 08	83.1	deg_C
ch 09	85.8	deg_C
ch 10	83.5	deg_C
ch 11	22.4	deg_C
ch 12	22.3	deg_C
ch 13	21.9	deg_C
ch 14	23.2	deg_C
ch 15	22.8	deg_C
ch 16	87.9	deg_C
ch 17	90.5	deg_C
ch 18	78.9	deg_C
ch 19	79.9	deg_C

EXP 01--SCAN 232--11 26 23 26 36
[redacted] Thermal Survey/Mueller"

ch 01	73.8	deg_C
ch 02	68.0	deg_C
ch 03	80.1	deg_C
ch 04	77.2	deg_C
ch 05	79.8	deg_C
ch 06	76.3	deg_C
ch 07	82.5	deg_C
ch 08	83.1	deg_C
ch 09	85.8	deg_C
ch 10	83.3	deg_C
ch 11	22.8	deg_C
ch 12	22.2	deg_C
ch 13	22.0	deg_C
ch 14	23.2	deg_C
ch 15	22.9	deg_C
ch 16	87.6	deg_C
ch 17	90.5	deg_C
ch 18	78.9	deg_C
ch 19	79.9	deg_C

EXP 01--SCAN 244--11 26 23 38 36
[redacted] Thermal Survey/Mueller"

ch 01	73.9	deg_C
ch 02	68.3	deg_C
ch 03	80.0	deg_C
ch 04	77.2	deg_C
ch 05	79.6	deg_C
ch 06	76.3	deg_C
ch 07	82.2	deg_C
ch 08	83.2	deg_C
ch 09	85.9	deg_C
ch 10	83.3	deg_C
ch 11	22.3	deg_C
ch 12	22.3	deg_C
ch 13	21.9	deg_C
ch 14	23.2	deg_C
ch 15	23.1	deg_C
ch 16	87.9	deg_C
ch 17	90.5	deg_C
ch 18	79.1	deg_C
ch 19	80.0	deg_C

23:15 LEVEL 1; CYCLE UUT PWR
TO REGAIN SYNTH LOCK

EXP 01--SCAN 224--11 26 23 18 36
[redacted] Thermal Survey/Mueller"

ch 01	73.8	deg_C
ch 02	68.2	deg_C
ch 03	80.0	deg_C
ch 04	77.2	deg_C
ch 05	79.5	deg_C
ch 06	76.2	deg_C
ch 07	82.4	deg_C
ch 08	83.1	deg_C
ch 09	85.9	deg_C
ch 10	83.3	deg_C
ch 11	22.5	deg_C
ch 12	22.2	deg_C
ch 13	21.8	deg_C
ch 14	23.2	deg_C
ch 15	22.8	deg_C
ch 16	87.7	deg_C
ch 17	90.5	deg_C
ch 18	79.0	deg_C
ch 19	79.9	deg_C

EXP 01--SCAN 236--11 26 23 30 36
[redacted] Thermal Survey/Mueller"

ch 01	73.8	deg_C
ch 02	68.2	deg_C
ch 03	80.0	deg_C
ch 04	77.2	deg_C
ch 05	79.6	deg_C
ch 06	76.3	deg_C
ch 07	82.9	deg_C
ch 08	83.2	deg_C
ch 09	85.8	deg_C
ch 10	83.3	deg_C
ch 11	22.6	deg_C
ch 12	22.2	deg_C
ch 13	21.8	deg_C
ch 14	23.1	deg_C
ch 15	22.9	deg_C
ch 16	87.8	deg_C
ch 17	90.5	deg_C
ch 18	79.0	deg_C
ch 19	79.9	deg_C

EXP 01--SCAN 248--11 26 23 40 43
[redacted] Thermal Survey/Mueller"

ch 01	73.9	deg_C
ch 02	69.1	deg_C
ch 03	80.0	deg_C
ch 04	77.3	deg_C
ch 05	79.6	deg_C
ch 06	76.3	deg_C
ch 07	82.0	deg_C
ch 08	83.1	deg_C
ch 09	85.6	deg_C
ch 10	83.3	deg_C
ch 11	22.5	deg_C
ch 12	22.2	deg_C
ch 13	21.8	deg_C
ch 14	23.1	deg_C
ch 15	22.9	deg_C
ch 16	87.7	deg_C
ch 17	90.5	deg_C
ch 18	79.1	deg_C
ch 19	80.0	deg_C

23:44 RAMP TO +77°C (+86°C COMPONENT); LEVEL 2

EXP 01--SCAN 252--11 26 23 44 35
[redacted] Thermal Survey/Mueller"

ch 01	74.0	deg_C
ch 02	69.1	deg_C
ch 03	80.9	deg_C
ch 04	77.3	deg_C
ch 05	79.6	deg_C
ch 06	75.3	deg_C
ch 07	82.0	deg_C
ch 08	83.1	deg_C
ch 09	85.8	deg_C
ch 10	83.3	deg_C
ch 11	22.7	deg_C
ch 12	22.2	deg_C
ch 13	21.8	deg_C
ch 14	23.1	deg_C
ch 15	22.9	deg_C
ch 16	87.9	deg_C
ch 17	90.7	deg_C
ch 18	79.2	deg_C
ch 19	80.1	deg_C

END DATA AVG.

EXP 01--SCAN 256--11 26 23 48 36
[redacted] Thermal Survey/Mueller"

ch 01	77.9	deg_C
ch 02	74.6	deg_C
ch 03	82.6	deg_C
ch 04	80.0	deg_C
ch 05	82.1	deg_C
ch 06	79.4	deg_C
ch 07	84.1	deg_C
ch 08	85.0	deg_C
ch 09	87.7	deg_C
ch 10	85.6	deg_C
ch 11	23.1	deg_C
ch 12	22.6	deg_C
ch 13	22.2	deg_C
ch 14	23.9	deg_C
ch 15	23.4	deg_C
ch 16	90.4	deg_C
ch 17	93.7	deg_C
ch 18	81.4	deg_C
ch 19	82.0	deg_C

EXP 01--SCAN 260--11 26 23 52 36
[redacted] Thermal Survey/Mueller"

ch 01	79.3	deg_C
ch 02	76.0	deg_C
ch 03	84.7	deg_C
ch 04	81.8	deg_C
ch 05	84.1	deg_C
ch 06	81.1	deg_C
ch 07	86.1	deg_C
ch 08	87.0	deg_C
ch 09	89.9	deg_C
ch 10	87.6	deg_C
ch 11	22.8	deg_C
ch 12	22.5	deg_C
ch 13	21.9	deg_C
ch 14	23.8	deg_C
ch 15	23.2	deg_C
ch 16	92.6	deg_C
ch 17	95.7	deg_C
ch 18	83.4	deg_C
ch 19	84.1	deg_C

EXP 01--SCAN 264--11 26 23 56 35
[redacted] Thermal Survey/Mueller"

ch 01	80.2	deg_C
ch 02	75.2	deg_C
ch 03	86.1	deg_C
ch 04	83.1	deg_C
ch 05	85.5	deg_C
ch 06	82.2	deg_C
ch 07	87.6	deg_C
ch 08	88.4	deg_C
ch 09	91.4	deg_C
ch 10	89.2	deg_C
ch 11	22.8	deg_C
ch 12	22.4	deg_C
ch 13	22.0	deg_C
ch 14	23.6	deg_C
ch 15	23.0	deg_C
ch 16	92.9	deg_C
ch 17	97.0	deg_C
ch 18	84.7	deg_C
ch 19	85.6	deg_C

EXP 01--SCAN 268--11 27 00 00 35
[redacted] Thermal Survey/Mueller"

ch 01	80.8	deg_C
ch 02	75.5	deg_C
ch 03	86.9	deg_C
ch 04	83.9	deg_C
ch 05	85.3	deg_C
ch 06	83.0	deg_C
ch 07	88.5	deg_C
ch 08	89.4	deg_C
ch 09	92.4	deg_C
ch 10	90.1	deg_C
ch 11	22.9	deg_C
ch 12	22.3	deg_C
ch 13	21.9	deg_C
ch 14	23.5	deg_C
ch 15	22.9	deg_C
ch 16	94.7	deg_C
ch 17	97.6	deg_C
ch 18	85.6	deg_C
ch 19	86.5	deg_C

EXP 01--SCAN 272--11 27 00 04 35
[redacted] Thermal Survey/Mueller"

ch 01	81.2	deg_C
ch 02	75.6	deg_C
ch 03	87.5	deg_C
ch 04	84.4	deg_C
ch 05	86.9	deg_C
ch 06	83.4	deg_C
ch 07	89.2	deg_C
ch 08	90.0	deg_C
ch 09	93.1	deg_C
ch 10	90.7	deg_C
ch 11	22.8	deg_C
ch 12	22.3	deg_C
ch 13	22.0	deg_C
ch 14	23.5	deg_C
ch 15	22.9	deg_C
ch 16	95.2	deg_C
ch 17	98.4	deg_C
ch 18	86.2	deg_C
ch 19	87.1	deg_C

EXP 01--SCAN 276--11 27 00 08 35
[redacted] Thermal Survey/Mueller"

ch 01	81.4	deg_C
ch 02	75.7	deg_C
ch 03	87.8	deg_C
ch 04	84.8	deg_C
ch 05	87.2	deg_C
ch 06	83.6	deg_C
ch 07	89.6	deg_C
ch 08	90.4	deg_C
ch 09	93.5	deg_C
ch 10	91.0	deg_C
ch 11	22.8	deg_C
ch 12	22.3	deg_C
ch 13	21.9	deg_C
ch 14	23.5	deg_C
ch 15	23.2	deg_C
ch 16	95.8	deg_C
ch 17	98.7	deg_C
ch 18	86.6	deg_C
ch 19	87.5	deg_C

EXP 01--SCAN 280--11 27 00 12 36
[redacted] Thermal Survey/Mueller"

ch 01	81.5	deg_C
ch 02	75.9	deg_C
ch 03	88.0	deg_C
ch 04	84.9	deg_C
ch 05	87.5	deg_C
ch 06	84.0	deg_C
ch 07	89.9	deg_C
ch 08	90.6	deg_C
ch 09	93.8	deg_C
ch 10	91.3	deg_C
ch 11	22.9	deg_C
ch 12	22.2	deg_C
ch 13	21.8	deg_C
ch 14	23.4	deg_C
ch 15	22.8	deg_C
ch 16	95.8	deg_C
ch 17	98.9	deg_C
ch 18	86.8	deg_C
ch 19	87.8	deg_C

START DATA AVG.

EXP 01--SCAN 284--11 27 00 16 36
[redacted] Thermal Survey/Mueller"

ch 01	81.7	deg_C
ch 02	75.8	deg_C
ch 03	88.2	deg_C
ch 04	85.1	deg_C
ch 05	87.6	deg_C
ch 06	84.1	deg_C
ch 07	90.0	deg_C
ch 08	90.9	deg_C
ch 09	94.0	deg_C
ch 10	91.4	deg_C
ch 11	22.7	deg_C
ch 12	22.5	deg_C
ch 13	22.1	deg_C
ch 14	23.5	deg_C
ch 15	23.2	deg_C
ch 16	96.0	deg_C
ch 17	99.0	deg_C
ch 18	97.0	deg_C
ch 19	96.0	deg_C

EXP 01--SCAN 296--11 27 00 28 36
[redacted] Thermal Survey/Mueller"

ch 01	81.6	deg_C
ch 02	75.6	deg_C
ch 03	88.4	deg_C
ch 04	85.3	deg_C
ch 05	87.6	deg_C
ch 06	84.3	deg_C
ch 07	90.3	deg_C
ch 08	91.0	deg_C
ch 09	94.2	deg_C
ch 10	91.6	deg_C
ch 11	22.8	deg_C
ch 12	22.5	deg_C
ch 13	22.2	deg_C
ch 14	23.5	deg_C
ch 15	23.1	deg_C
ch 16	96.2	deg_C
ch 17	99.2	deg_C
ch 18	97.2	deg_C
ch 19	96.2	deg_C

EXP 01--SCAN 308--11 27 00 40 36
[redacted] Thermal Survey/Mueller"

ch 01	87.5	deg_C
ch 02	82.8	deg_C
ch 03	93.7	deg_C
ch 04	90.5	deg_C
ch 05	92.9	deg_C
ch 06	89.7	deg_C
ch 07	95.1	deg_C
ch 08	95.5	deg_C
ch 09	98.0	deg_C
ch 10	96.7	deg_C
ch 11	23.3	deg_C
ch 12	22.8	deg_C
ch 13	22.2	deg_C
ch 14	24.2	deg_C
ch 15	23.4	deg_C
ch 16	101.6	deg_C
ch 17	105.0	deg_C
ch 18	92.1	deg_C
ch 19	93.0	deg_C

00:30 RAMP TO +85°C (+94°C COMPONENT); LEVEL 3

END DATA AVG.

EXP 01--SCAN 288--11 27 00 20 36
[redacted] Thermal Survey/Mueller"

ch 01	81.7	deg_C
ch 02	75.8	deg_C
ch 03	88.3	deg_C
ch 04	85.2	deg_C
ch 05	87.7	deg_C
ch 06	84.2	deg_C
ch 07	90.2	deg_C
ch 08	90.9	deg_C
ch 09	94.1	deg_C
ch 10	91.5	deg_C
ch 11	22.9	deg_C
ch 12	22.4	deg_C
ch 13	22.1	deg_C
ch 14	23.4	deg_C
ch 15	23.0	deg_C
ch 16	96.1	deg_C
ch 17	99.2	deg_C
ch 18	97.1	deg_C
ch 19	96.0	deg_C

EXP 01--SCAN 300--11 27 00 32 36
[redacted] Thermal Survey/Mueller"

ch 01	84.3	deg_C
ch 02	81.5	deg_C
ch 03	89.6	deg_C
ch 04	85.7	deg_C
ch 05	88.6	deg_C
ch 06	86.0	deg_C
ch 07	90.9	deg_C
ch 08	91.7	deg_C
ch 09	94.7	deg_C
ch 10	92.3	deg_C
ch 11	23.4	deg_C
ch 12	22.6	deg_C
ch 13	22.2	deg_C
ch 14	24.1	deg_C
ch 15	23.4	deg_C
ch 16	97.2	deg_C
ch 17	100.2	deg_C
ch 18	98.3	deg_C
ch 19	98.9	deg_C

EXP 01--SCAN 312--11 27 00 44 36
[redacted] Thermal Survey/Mueller"

ch 01	88.4	deg_C
ch 02	83.0	deg_C
ch 03	94.3	deg_C
ch 04	91.5	deg_C
ch 05	94.1	deg_C
ch 06	90.6	deg_C
ch 07	96.3	deg_C
ch 08	96.7	deg_C
ch 09	100.4	deg_C
ch 10	97.9	deg_C
ch 11	23.3	deg_C
ch 12	22.8	deg_C
ch 13	22.2	deg_C
ch 14	24.0	deg_C
ch 15	23.5	deg_C
ch 16	102.7	deg_C
ch 17	106.1	deg_C
ch 18	93.3	deg_C
ch 19	94.2	deg_C

EXP 01--SCAN 292--11 27 00 24 36
[redacted] Thermal Survey/Mueller"

ch 01	81.9	deg_C
ch 02	75.8	deg_C
ch 03	88.4	deg_C
ch 04	85.3	deg_C
ch 05	87.8	deg_C
ch 06	84.2	deg_C
ch 07	90.2	deg_C
ch 08	91.0	deg_C
ch 09	94.2	deg_C
ch 10	91.6	deg_C
ch 11	22.9	deg_C
ch 12	22.4	deg_C
ch 13	22.1	deg_C
ch 14	23.5	deg_C
ch 15	23.2	deg_C
ch 16	96.1	deg_C
ch 17	99.2	deg_C
ch 18	97.2	deg_C
ch 19	96.1	deg_C

EXP 01--SCAN 304--11 27 00 36 36
[redacted] Thermal Survey/Mueller"

ch 01	86.4	deg_C
ch 02	82.2	deg_C
ch 03	91.9	deg_C
ch 04	88.9	deg_C
ch 05	91.2	deg_C
ch 06	88.2	deg_C
ch 07	93.2	deg_C
ch 08	93.8	deg_C
ch 09	96.9	deg_C
ch 10	94.9	deg_C
ch 11	23.4	deg_C
ch 12	22.9	deg_C
ch 13	22.4	deg_C
ch 14	24.5	deg_C
ch 15	23.7	deg_C
ch 16	99.7	deg_C
ch 17	103.2	deg_C
ch 18	90.4	deg_C
ch 19	91.1	deg_C

EXP 01--SCAN 316--11 27 00 48 36
[redacted] Thermal Survey/Mueller"

ch 01	88.8	deg_C
ch 02	83.2	deg_C
ch 03	95.6	deg_C
ch 04	92.3	deg_C
ch 05	94.8	deg_C
ch 06	91.3	deg_C
ch 07	97.2	deg_C
ch 08	97.6	deg_C
ch 09	101.3	deg_C
ch 10	98.7	deg_C
ch 11	23.9	deg_C
ch 12	22.6	deg_C
ch 13	22.1	deg_C
ch 14	24.0	deg_C
ch 15	23.4	deg_C
ch 16	103.5	deg_C
ch 17	106.9	deg_C
ch 18	94.1	deg_C
ch 19	95.0	deg_C

EXP 01--SCAN 328--11 27 00 52 36
[redacted] Thermal Survey/Mueller"

ch	01	89.2	deg_C
ch	02	93.3	deg_C
ch	03	96.1	deg_C
ch	04	92.7	deg_C
ch	05	95.3	deg_C
ch	06	91.7	deg_C
ch	07	97.8	deg_C
ch	08	98.1	deg_C
ch	09	101.9	deg_C
ch	10	99.2	deg_C
ch	11	22.9	deg_C
ch	12	22.8	deg_C
ch	13	22.4	deg_C
ch	14	23.9	deg_C
ch	15	23.5	deg_C
ch	16	103.9	deg_C
ch	17	107.3	deg_C
ch	18	94.6	deg_C
ch	19	95.5	deg_C

EXP 01--SCAN 332--11 27 01 04 36
[redacted] Thermal Survey/Mueller"

ch	01	89.7	deg_C
ch	02	93.4	deg_C
ch	03	96.7	deg_C
ch	04	93.3	deg_C
ch	05	96.0	deg_C
ch	06	92.2	deg_C
ch	07	98.5	deg_C
ch	08	98.6	deg_C
ch	09	102.7	deg_C
ch	10	99.9	deg_C
ch	11	22.8	deg_C
ch	12	22.5	deg_C
ch	13	22.1	deg_C
ch	14	23.7	deg_C
ch	15	23.2	deg_C
ch	16	104.5	deg_C
ch	17	108.0	deg_C
ch	18	95.2	deg_C
ch	19	96.3	deg_C

EXP 01--SCAN 344--11 27 01 16 36
[redacted] Thermal Survey/Mueller"

ch	01	89.6	deg_C
ch	02	93.4	deg_C
ch	03	96.9	deg_C
ch	04	93.6	deg_C
ch	05	96.2	deg_C
ch	06	92.5	deg_C
ch	07	98.7	deg_C
ch	08	99.1	deg_C
ch	09	102.9	deg_C
ch	10	100.1	deg_C
ch	11	22.5	deg_C
ch	12	22.4	deg_C
ch	13	22.0	deg_C
ch	14	23.6	deg_C
ch	15	23.0	deg_C
ch	16	104.9	deg_C
ch	17	108.2	deg_C
ch	18	95.5	deg_C
ch	19	96.5	deg_C

EXP 01--SCAN 324--11 27 00 56 36
[redacted] Thermal Survey/Mueller"

ch	01	89.5	deg_C
ch	02	93.2	deg_C
ch	03	96.4	deg_C
ch	04	93.0	deg_C
ch	05	95.7	deg_C
ch	06	91.9	deg_C
ch	07	98.1	deg_C
ch	08	98.5	deg_C
ch	09	102.2	deg_C
ch	10	99.6	deg_C
ch	11	22.9	deg_C
ch	12	22.6	deg_C
ch	13	22.2	deg_C
ch	14	23.8	deg_C
ch	15	23.3	deg_C
ch	16	101.2	deg_C
ch	17	107.6	deg_C
ch	18	94.9	deg_C
ch	19	95.9	deg_C

EXP 01--SCAN 336--11 27 01 08 36
[redacted] Thermal Survey/Mueller"

ch	01	89.6	deg_C
ch	02	93.6	deg_C
ch	03	96.8	deg_C
ch	04	93.4	deg_C
ch	05	96.0	deg_C
ch	06	92.3	deg_C
ch	07	98.6	deg_C
ch	08	98.8	deg_C
ch	09	102.8	deg_C
ch	10	100.0	deg_C
ch	11	22.7	deg_C
ch	12	22.6	deg_C
ch	13	22.3	deg_C
ch	14	23.7	deg_C
ch	15	23.3	deg_C
ch	16	104.7	deg_C
ch	17	108.1	deg_C
ch	18	95.3	deg_C
ch	19	96.4	deg_C

EXP 01--SCAN 348--11 27 01 20 36
[redacted] Thermal Survey/Mueller"

ch	01	89.9	deg_C
ch	02	93.6	deg_C
ch	03	96.9	deg_C
ch	04	93.6	deg_C
ch	05	96.2	deg_C
ch	06	92.5	deg_C
ch	07	98.6	deg_C
ch	08	99.1	deg_C
ch	09	103.0	deg_C
ch	10	100.1	deg_C
ch	11	22.7	deg_C
ch	12	22.5	deg_C
ch	13	22.1	deg_C
ch	14	23.6	deg_C
ch	15	23.2	deg_C
ch	16	104.6	deg_C
ch	17	108.2	deg_C
ch	18	95.5	deg_C
ch	19	96.5	deg_C

START DATA AVG.

EXP 01--SCAN 328--11 27 01 00 36
[redacted] Thermal Survey/Mueller"

ch	01	89.6	deg_C
ch	02	93.5	deg_C
ch	03	96.6	deg_C
ch	04	93.2	deg_C
ch	05	95.8	deg_C
ch	06	92.1	deg_C
ch	07	98.4	deg_C
ch	08	98.7	deg_C
ch	09	102.5	deg_C
ch	10	99.7	deg_C
ch	11	22.8	deg_C
ch	12	22.5	deg_C
ch	13	22.3	deg_C
ch	14	23.8	deg_C
ch	15	23.4	deg_C
ch	16	104.5	deg_C
ch	17	107.8	deg_C
ch	18	95.1	deg_C
ch	19	96.1	deg_C

EXP 01--SCAN 340--11 27 01 12 36
[redacted] Thermal Survey/Mueller"

ch	01	89.8	deg_C
ch	02	93.5	deg_C
ch	03	96.9	deg_C
ch	04	93.5	deg_C
ch	05	96.1	deg_C
ch	06	92.4	deg_C
ch	07	98.7	deg_C
ch	08	99.0	deg_C
ch	09	102.9	deg_C
ch	10	100.1	deg_C
ch	11	22.7	deg_C
ch	12	22.6	deg_C
ch	13	22.2	deg_C
ch	14	23.8	deg_C
ch	15	23.2	deg_C
ch	16	104.8	deg_C
ch	17	108.1	deg_C
ch	18	95.4	deg_C
ch	19	96.4	deg_C

EXP 01--SCAN 352--11 27 01 24 36
[redacted] Thermal Survey/Mueller"

ch	01	89.8	deg_C
ch	02	93.4	deg_C
ch	03	96.9	deg_C
ch	04	93.5	deg_C
ch	05	96.2	deg_C
ch	06	92.4	deg_C
ch	07	98.8	deg_C
ch	08	99.1	deg_C
ch	09	103.0	deg_C
ch	10	100.1	deg_C
ch	11	22.5	deg_C
ch	12	22.5	deg_C
ch	13	22.1	deg_C
ch	14	23.5	deg_C
ch	15	23.2	deg_C
ch	16	104.8	deg_C
ch	17	108.2	deg_C
ch	18	95.5	deg_C
ch	19	96.5	deg_C

EXP 01--SCAN 355--11 27 01 28 36
[redacted] Thermal Survey/Mueller"

ch 01	88.9	deg_C
ch 02	88.6	deg_C
ch 03	87.9	deg_C
ch 04	88.6	deg_C
ch 05	96.2	deg_C
ch 06	92.5	deg_C
ch 07	98.8	deg_C
ch 08	98.1	deg_C
ch 09	103.0	deg_C
ch 10	100.2	deg_C
ch 11	22.6	deg_C
ch 12	22.7	deg_C
ch 13	22.3	deg_C
ch 14	23.5	deg_C
ch 15	23.4	deg_C
ch 16	104.8	deg_C
ch 17	106.2	deg_C
ch 18	96.5	deg_C
ch 19	96.5	deg_C

01:30 RAMP TO +93°C (+102°C
COMPONENT; LEVEL 4
END DATA AVG.

EXP 01--SCAN 359--11 27 01 32 36
[redacted] Thermal Survey/Mueller"

ch 01	93.1	deg_C
ch 02	89.6	deg_C
ch 03	98.9	deg_C
ch 04	95.7	deg_C
ch 05	99.0	deg_C
ch 06	94.9	deg_C
ch 07	100.2	deg_C
ch 08	100.4	deg_C
ch 09	104.1	deg_C
ch 10	101.5	deg_C
ch 11	22.7	deg_C
ch 12	22.5	deg_C
ch 13	22.1	deg_C
ch 14	23.5	deg_C
ch 15	23.2	deg_C
ch 16	106.5	deg_C
ch 17	110.4	deg_C
ch 18	97.2	deg_C
ch 19	97.9	deg_C

EXP 01--SCAN 364--11 27 01 36 36
[redacted] Thermal Survey/Mueller"

ch 01	94.9	deg_C
ch 02	99.5	deg_C
ch 03	101.1	deg_C
ch 04	97.7	deg_C
ch 05	100.2	deg_C
ch 06	96.8	deg_C
ch 07	102.4	deg_C
ch 08	102.4	deg_C
ch 09	106.4	deg_C
ch 10	103.8	deg_C
ch 11	22.8	deg_C
ch 12	22.7	deg_C
ch 13	22.4	deg_C
ch 14	23.7	deg_C
ch 15	23.3	deg_C
ch 16	109.0	deg_C
ch 17	112.8	deg_C
ch 18	99.2	deg_C
ch 19	100.1	deg_C

EXP 01--SCAN 366--11 27 01 40 36
[redacted] Thermal Survey/Mueller"

ch 01	95.0	deg_C
ch 02	90.9	deg_C
ch 03	102.6	deg_C
ch 04	99.1	deg_C
ch 05	101.7	deg_C
ch 06	98.1	deg_C
ch 07	103.9	deg_C
ch 08	103.9	deg_C
ch 09	106.2	deg_C
ch 10	105.4	deg_C
ch 11	22.8	deg_C
ch 12	22.7	deg_C
ch 13	22.8	deg_C
ch 14	23.7	deg_C
ch 15	23.6	deg_C
ch 16	110.5	deg_C
ch 17	114.4	deg_C
ch 18	100.7	deg_C
ch 19	101.7	deg_C

EXP 01--SCAN 372--11 27 01 44 36
[redacted] Thermal Survey/Mueller"

ch 01	95.7	deg_C
ch 02	91.0	deg_C
ch 03	103.7	deg_C
ch 04	100.0	deg_C
ch 05	102.7	deg_C
ch 06	99.0	deg_C
ch 07	104.1	deg_C
ch 08	105.1	deg_C
ch 09	108.4	deg_C
ch 10	105.4	deg_C
ch 11	22.8	deg_C
ch 12	22.4	deg_C
ch 13	22.0	deg_C
ch 14	23.6	deg_C
ch 15	23.1	deg_C
ch 16	111.6	deg_C
ch 17	115.3	deg_C
ch 18	101.8	deg_C
ch 19	102.8	deg_C

EXP 01--SCAN 378--11 27 01 48 36
[redacted] Thermal Survey/Mueller"

ch 01	97.1	deg_C
ch 02	91.0	deg_C
ch 03	104.3	deg_C
ch 04	100.6	deg_C
ch 05	103.3	deg_C
ch 06	99.6	deg_C
ch 07	105.9	deg_C
ch 08	105.6	deg_C
ch 09	110.2	deg_C
ch 10	107.1	deg_C
ch 11	22.7	deg_C
ch 12	22.4	deg_C
ch 13	22.0	deg_C
ch 14	23.6	deg_C
ch 15	23.1	deg_C
ch 16	112.2	deg_C
ch 17	116.0	deg_C
ch 18	102.5	deg_C
ch 19	103.5	deg_C

EXP 01--SCAN 380--11 27 01 52 36
[redacted] Thermal Survey/Mueller"

ch 01	97.4	deg_C
ch 02	90.9	deg_C
ch 03	104.7	deg_C
ch 04	101.0	deg_C
ch 05	103.8	deg_C
ch 06	99.9	deg_C
ch 07	105.3	deg_C
ch 08	106.3	deg_C
ch 09	110.7	deg_C
ch 10	107.5	deg_C
ch 11	22.7	deg_C
ch 12	22.5	deg_C
ch 13	22.0	deg_C
ch 14	23.6	deg_C
ch 15	23.2	deg_C
ch 16	112.7	deg_C
ch 17	116.4	deg_C
ch 18	102.9	deg_C
ch 19	104.0	deg_C

EXP 01--SCAN 384--11 27 01 56 36
[redacted] Thermal Survey/Mueller"

ch 01	97.8	deg_C
ch 02	91.1	deg_C
ch 03	105.0	deg_C
ch 04	101.3	deg_C
ch 05	104.1	deg_C
ch 06	100.1	deg_C
ch 07	106.8	deg_C
ch 08	106.6	deg_C
ch 09	111.1	deg_C
ch 10	107.8	deg_C
ch 11	22.7	deg_C
ch 12	22.6	deg_C
ch 13	22.3	deg_C
ch 14	23.6	deg_C
ch 15	23.5	deg_C
ch 16	113.0	deg_C
ch 17	116.7	deg_C
ch 18	103.2	deg_C
ch 19	104.3	deg_C

START DATA AVG.

EXP 01--SCAN 386--11 27 02 00 36
[redacted] Thermal Survey/Mueller"

ch 01	97.6	deg_C
ch 02	91.2	deg_C
ch 03	105.2	deg_C
ch 04	101.6	deg_C
ch 05	104.2	deg_C
ch 06	100.4	deg_C
ch 07	106.9	deg_C
ch 08	106.8	deg_C
ch 09	111.3	deg_C
ch 10	108.0	deg_C
ch 11	22.9	deg_C
ch 12	22.4	deg_C
ch 13	22.1	deg_C
ch 14	23.5	deg_C
ch 15	23.0	deg_C
ch 16	113.2	deg_C
ch 17	116.9	deg_C
ch 18	103.4	deg_C
ch 19	104.5	deg_C

EXP 01--SCAN 392--11 27 02 04 36
[redacted] Thermal Survey/Mueller"

ch	01	97.6	deg_C
ch	02	91.1	deg_C
ch	03	105.3	deg_C
ch	04	101.7	deg_C
ch	05	104.3	deg_C
ch	06	100.5	deg_C
ch	07	107.0	deg_C
ch	08	105.8	deg_C
ch	09	111.4	deg_C
ch	10	106.2	deg_C
ch	11	22.8	deg_C
ch	12	22.6	deg_C
ch	13	22.4	deg_C
ch	14	23.5	deg_C
ch	15	23.9	deg_C
ch	16	113.3	deg_C
ch	17	117.0	deg_C
ch	18	103.6	deg_C
ch	19	104.7	deg_C

EXP 01--SCAN 404--11 27 02 16 36
[redacted] Thermal Survey/Mueller"

ch	01	96.0	deg_C
ch	02	91.3	deg_C
ch	03	105.5	deg_C
ch	04	101.7	deg_C
ch	05	104.5	deg_C
ch	06	100.5	deg_C
ch	07	107.3	deg_C
ch	08	107.1	deg_C
ch	09	111.7	deg_C
ch	10	106.3	deg_C
ch	11	22.8	deg_C
ch	12	22.4	deg_C
ch	13	22.0	deg_C
ch	14	23.5	deg_C
ch	15	23.1	deg_C
ch	16	113.5	deg_C
ch	17	117.2	deg_C
ch	18	103.5	deg_C
ch	19	104.7	deg_C

EXP 01--SCAN 416--11 27 02 26 36
[redacted] Thermal Survey/Mueller"

ch	01	96.0	deg_C
ch	02	91.4	deg_C
ch	03	105.7	deg_C
ch	04	101.9	deg_C
ch	05	104.5	deg_C
ch	06	100.6	deg_C
ch	07	106.1	deg_C
ch	08	107.3	deg_C
ch	09	111.6	deg_C
ch	10	106.7	deg_C
ch	11	22.9	deg_C
ch	12	22.5	deg_C
ch	13	22.1	deg_C
ch	14	23.5	deg_C
ch	15	23.2	deg_C
ch	16	113.5	deg_C
ch	17	117.4	deg_C
ch	18	103.7	deg_C
ch	19	104.9	deg_C

EXP 01--SCAN 396--11 27 02 08 36
[redacted] Thermal Survey/Mueller"

ch	01	97.6	deg_C
ch	02	91.2	deg_C
ch	03	105.4	deg_C
ch	04	101.7	deg_C
ch	05	104.4	deg_C
ch	06	100.5	deg_C
ch	07	107.1	deg_C
ch	08	107.0	deg_C
ch	09	111.5	deg_C
ch	10	106.2	deg_C
ch	11	22.9	deg_C
ch	12	22.5	deg_C
ch	13	21.9	deg_C
ch	14	23.5	deg_C
ch	15	23.3	deg_C
ch	16	113.4	deg_C
ch	17	117.1	deg_C
ch	18	103.6	deg_C
ch	19	104.8	deg_C

EXP 01--SCAN 408--11 27 02 20 36
[redacted] Thermal Survey/Mueller"

ch	01	97.5	deg_C
ch	02	91.2	deg_C
ch	03	105.5	deg_C
ch	04	101.8	deg_C
ch	05	104.5	deg_C
ch	06	100.7	deg_C
ch	07	107.6	deg_C
ch	08	107.1	deg_C
ch	09	111.7	deg_C
ch	10	106.6	deg_C
ch	11	22.6	deg_C
ch	12	22.3	deg_C
ch	13	21.8	deg_C
ch	14	23.4	deg_C
ch	15	23.1	deg_C
ch	16	113.6	deg_C
ch	17	117.2	deg_C
ch	18	103.6	deg_C
ch	19	104.8	deg_C

EXP 01--SCAN 420--11 27 02 32 36
[redacted] Thermal Survey/Mueller"

ch	01	96.0	deg_C
ch	02	91.4	deg_C
ch	03	105.7	deg_C
ch	04	101.9	deg_C
ch	05	104.5	deg_C
ch	06	100.6	deg_C
ch	07	106.9	deg_C
ch	08	107.3	deg_C
ch	09	111.9	deg_C
ch	10	106.9	deg_C
ch	11	22.9	deg_C
ch	12	22.5	deg_C
ch	13	22.1	deg_C
ch	14	23.5	deg_C
ch	15	23.3	deg_C
ch	16	114.0	deg_C
ch	17	117.5	deg_C
ch	18	103.8	deg_C
ch	19	104.9	deg_C

EXP 01--SCAN 400--11 27 02 12 36
[redacted] Thermal Survey/Mueller"

ch	01	97.5	deg_C
ch	02	91.2	deg_C
ch	03	105.5	deg_C
ch	04	101.7	deg_C
ch	05	104.5	deg_C
ch	06	100.5	deg_C
ch	07	107.3	deg_C
ch	08	107.0	deg_C
ch	09	111.5	deg_C
ch	10	106.3	deg_C
ch	11	22.8	deg_C
ch	12	22.5	deg_C
ch	13	22.2	deg_C
ch	14	23.5	deg_C
ch	15	23.3	deg_C
ch	16	113.4	deg_C
ch	17	117.1	deg_C
ch	18	103.6	deg_C
ch	19	104.7	deg_C

EXP 01--SCAN 412--11 27 02 24 36
[redacted] Thermal Survey/Mueller"

ch	01	96.0	deg_C
ch	02	91.2	deg_C
ch	03	105.6	deg_C
ch	04	101.8	deg_C
ch	05	104.5	deg_C
ch	06	100.6	deg_C
ch	07	106.2	deg_C
ch	08	107.3	deg_C
ch	09	111.9	deg_C
ch	10	106.6	deg_C
ch	11	22.8	deg_C
ch	12	22.5	deg_C
ch	13	22.1	deg_C
ch	14	23.5	deg_C
ch	15	23.3	deg_C
ch	16	113.7	deg_C
ch	17	117.4	deg_C
ch	18	103.7	deg_C
ch	19	104.8	deg_C

EXP 01--SCAN 424--11 27 02 36 36
[redacted] Thermal Survey/Mueller"

ch	01	96.0	deg_C
ch	02	91.5	deg_C
ch	03	105.8	deg_C
ch	04	101.9	deg_C
ch	05	104.7	deg_C
ch	06	100.9	deg_C
ch	07	106.5	deg_C
ch	08	107.4	deg_C
ch	09	111.9	deg_C
ch	10	106.9	deg_C
ch	11	22.8	deg_C
ch	12	22.4	deg_C
ch	13	22.1	deg_C
ch	14	23.4	deg_C
ch	15	23.3	deg_C
ch	16	114.0	deg_C
ch	17	117.5	deg_C
ch	18	103.8	deg_C
ch	19	104.9	deg_C

EXP 01--SCAN 428--11 27 02 40 36
[redacted] Thermal Survey/Mueller"

ch 01	98.1	deg_C
ch 02	91.3	deg_C
ch 03	105.8	deg_C
ch 04	101.9	deg_C
ch 05	104.6	deg_C
ch 06	100.9	deg_C
ch 07	107.7	deg_C
ch 08	107.4	deg_C
ch 09	111.9	deg_C
ch 10	109.1	deg_C
ch 11	22.8	deg_C
ch 12	22.4	deg_C
ch 13	22.1	deg_C
ch 14	23.4	deg_C
ch 15	23.0	deg_C
ch 16	114.1	deg_C
ch 17	117.5	deg_C
ch 18	103.8	deg_C
ch 19	105.0	deg_C

EXP 01--SCAN 432--11 27 02 44 36
[redacted] Thermal Survey/Mueller"

ch 01	98.1	deg_C
ch 02	91.2	deg_C
ch 03	105.8	deg_C
ch 04	101.9	deg_C
ch 05	104.6	deg_C
ch 06	100.9	deg_C
ch 07	107.5	deg_C
ch 08	107.3	deg_C
ch 09	112.1	deg_C
ch 10	109.2	deg_C
ch 11	22.7	deg_C
ch 12	22.5	deg_C
ch 13	21.9	deg_C
ch 14	23.4	deg_C
ch 15	23.1	deg_C
ch 16	114.2	deg_C
ch 17	117.5	deg_C
ch 18	103.8	deg_C
ch 19	105.0	deg_C

EXP 01--SCAN 436--11 27 02 48 36
[redacted] Thermal Survey/Mueller"

ch 01	98.0	deg_C
ch 02	91.2	deg_C
ch 03	105.8	deg_C
ch 04	101.9	deg_C
ch 05	104.6	deg_C
ch 06	100.7	deg_C
ch 07	107.5	deg_C
ch 08	107.3	deg_C
ch 09	112.1	deg_C
ch 10	109.2	deg_C
ch 11	22.6	deg_C
ch 12	22.5	deg_C
ch 13	22.1	deg_C
ch 14	23.4	deg_C
ch 15	23.3	deg_C
ch 16	114.2	deg_C
ch 17	117.5	deg_C
ch 18	103.8	deg_C
ch 19	104.9	deg_C

EXP 01--SCAN 440--11 27 02 52 36
[redacted] Thermal Survey/Mueller"

ch 01	98.1	deg_C
ch 02	91.5	deg_C
ch 03	105.8	deg_C
ch 04	101.9	deg_C
ch 05	104.6	deg_C
ch 06	100.8	deg_C
ch 07	108.0	deg_C
ch 08	107.3	deg_C
ch 09	112.0	deg_C
ch 10	109.0	deg_C
ch 11	22.7	deg_C
ch 12	22.3	deg_C
ch 13	21.9	deg_C
ch 14	23.4	deg_C
ch 15	22.8	deg_C
ch 16	114.1	deg_C
ch 17	117.5	deg_C
ch 18	103.8	deg_C
ch 19	104.9	deg_C

EXP 01--SCAN 444--11 27 02 56 36
[redacted] Thermal Survey/Mueller"

ch 01	98.1	deg_C
ch 02	91.3	deg_C
ch 03	105.8	deg_C
ch 04	102.0	deg_C
ch 05	104.6	deg_C
ch 06	100.8	deg_C
ch 07	107.5	deg_C
ch 08	107.3	deg_C
ch 09	111.9	deg_C
ch 10	108.9	deg_C
ch 11	22.6	deg_C
ch 12	22.4	deg_C
ch 13	21.9	deg_C
ch 14	23.3	deg_C
ch 15	23.1	deg_C
ch 16	114.0	deg_C
ch 17	117.5	deg_C
ch 18	103.8	deg_C
ch 19	105.0	deg_C

END DATA AVG.

EXP 01--SCAN 448--11 27 03 00 36
[redacted] Thermal Survey/Mueller"

ch 01	98.1	deg_C
ch 02	91.3	deg_C
ch 03	105.8	deg_C
ch 04	102.0	deg_C
ch 05	104.6	deg_C
ch 06	100.8	deg_C
ch 07	107.5	deg_C
ch 08	107.3	deg_C
ch 09	111.9	deg_C
ch 10	108.9	deg_C
ch 11	22.5	deg_C
ch 12	22.4	deg_C
ch 13	21.9	deg_C
ch 14	23.3	deg_C
ch 15	22.9	deg_C
ch 16	114.0	deg_C
ch 17	117.5	deg_C
ch 18	103.9	deg_C
ch 19	105.0	deg_C

EXP 01--SCAN 452--11 27 03 04 36
[redacted] Thermal Survey/Mueller"

ch 01	98.1	deg_C
ch 02	91.3	deg_C
ch 03	105.8	deg_C
ch 04	101.8	deg_C
ch 05	104.6	deg_C
ch 06	100.8	deg_C
ch 07	107.5	deg_C
ch 08	107.3	deg_C
ch 09	111.8	deg_C
ch 10	108.8	deg_C
ch 11	22.5	deg_C
ch 12	22.4	deg_C
ch 13	22.0	deg_C
ch 14	23.3	deg_C
ch 15	23.2	deg_C
ch 16	114.0	deg_C
ch 17	117.5	deg_C
ch 18	103.8	deg_C
ch 19	104.9	deg_C

EXP 01--SCAN 456--11 27 03 08 36
[redacted] Thermal Survey/Mueller"

ch 01	98.0	deg_C
ch 02	91.4	deg_C
ch 03	105.8	deg_C
ch 04	101.8	deg_C
ch 05	104.2	deg_C
ch 06	100.7	deg_C
ch 07	105.4	deg_C
ch 08	104.8	deg_C
ch 09	110.7	deg_C
ch 10	107.2	deg_C
ch 11	22.5	deg_C
ch 12	22.8	deg_C
ch 13	22.2	deg_C
ch 14	23.4	deg_C
ch 15	23.7	deg_C
ch 16	111.8	deg_C
ch 17	111.7	deg_C
ch 18	103.5	deg_C
ch 19	104.1	deg_C

03:10 TURN UUT PWR OFF;
LET CHAMBER DWELL AT +93°C
(SETTING)

EXP 01--SCAN 460--11 27 03 12 36
[redacted] Thermal Survey/Mueller"

ch 01	95.1	deg_C
ch 02	91.5	deg_C
ch 03	98.5	deg_C
ch 04	96.2	deg_C
ch 05	98.1	deg_C
ch 06	97.5	deg_C
ch 07	98.7	deg_C
ch 08	98.7	deg_C
ch 09	102.1	deg_C
ch 10	100.6	deg_C
ch 11	21.5	deg_C
ch 12	22.5	deg_C
ch 13	22.0	deg_C
ch 14	23.4	deg_C
ch 15	23.3	deg_C
ch 16	101.0	deg_C
ch 17	100.4	deg_C
ch 18	99.1	deg_C
ch 19	99.7	deg_C

EXP 01--SCAN 464--11 27 03 16 38
[redacted]Thermal Survey/Mueller"

ch 01	94.3	deg_C
ch 02	91.4	deg_C
ch 03	96.3	deg_C
ch 04	95.7	deg_C
ch 05	96.0	deg_C
ch 06	95.2	deg_C
ch 07	96.7	deg_C
ch 08	96.7	deg_C
ch 09	97.5	deg_C
ch 10	96.9	deg_C
ch 11	22.6	deg_C
ch 12	22.4	deg_C
ch 13	22.1	deg_C
ch 14	23.4	deg_C
ch 15	23.3	deg_C
ch 16	96.8	deg_C
ch 17	96.9	deg_C
ch 18	96.2	deg_C
ch 19	96.6	deg_C

EXP 01--SCAN 476--11 27 03 28 38
[redacted]Thermal Survey/Mueller"

ch 01	92.1	deg_C
ch 02	91.1	deg_C
ch 03	92.7	deg_C
ch 04	92.5	deg_C
ch 05	92.5	deg_C
ch 06	92.4	deg_C
ch 07	92.7	deg_C
ch 08	92.8	deg_C
ch 09	92.9	deg_C
ch 10	92.8	deg_C
ch 11	22.5	deg_C
ch 12	22.5	deg_C
ch 13	22.2	deg_C
ch 14	23.4	deg_C
ch 15	23.1	deg_C
ch 16	92.8	deg_C
ch 17	92.7	deg_C
ch 18	92.6	deg_C
ch 19	92.8	deg_C

EXP 01--SCAN 468--11 27 03 20 38
[redacted] Thermal Survey/Mueller"

ch 01	93.2	deg_C
ch 02	91.2	deg_C
ch 03	94.4	deg_C
ch 04	94.1	deg_C
ch 05	94.2	deg_C
ch 06	93.6	deg_C
ch 07	94.8	deg_C
ch 08	94.8	deg_C
ch 09	95.1	deg_C
ch 10	94.7	deg_C
ch 11	22.6	deg_C
ch 12	22.5	deg_C
ch 13	22.1	deg_C
ch 14	23.4	deg_C
ch 15	23.4	deg_C
ch 16	94.7	deg_C
ch 17	94.6	deg_C
ch 18	94.4	deg_C
ch 19	94.7	deg_C

EXP 01--SCAN 480--11 27 03 32 38
[redacted]Thermal Survey/Mueller"

ch 01	91.9	deg_C
ch 02	91.2	deg_C
ch 03	92.2	deg_C
ch 04	92.1	deg_C
ch 05	92.2	deg_C
ch 06	92.0	deg_C
ch 07	92.3	deg_C
ch 08	92.3	deg_C
ch 09	92.4	deg_C
ch 10	92.3	deg_C
ch 11	22.4	deg_C
ch 12	22.5	deg_C
ch 13	22.1	deg_C
ch 14	23.4	deg_C
ch 15	23.5	deg_C
ch 16	92.1	deg_C
ch 17	92.3	deg_C
ch 18	92.2	deg_C
ch 19	92.3	deg_C

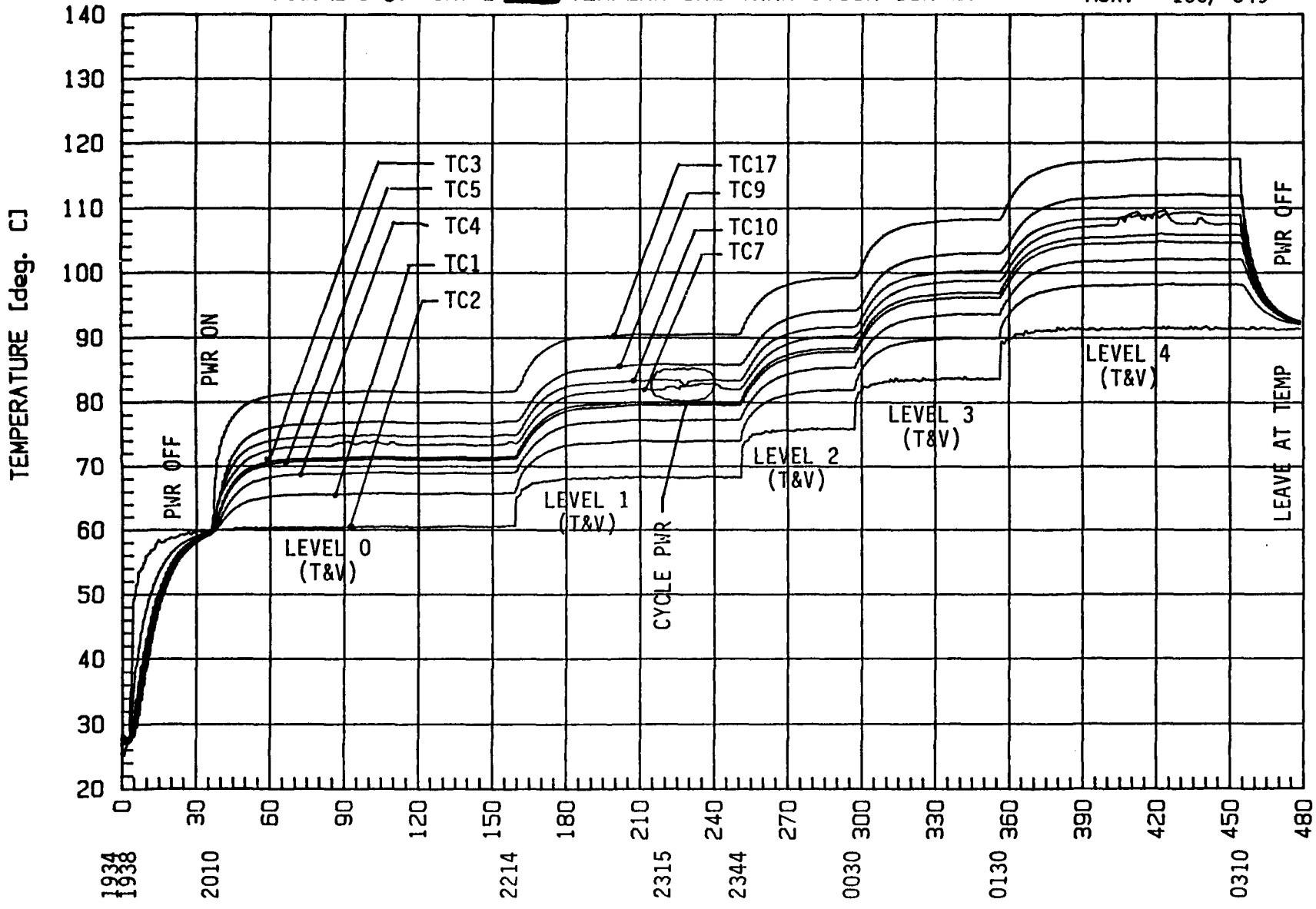
END DATA FOR TRIAL TEST DAY 2

EXP 01--SCAN 472--11 27 03 24 38
[redacted]Thermal Survey/Mueller"

ch 01	92.5	deg_C
ch 02	91.2	deg_C
ch 03	93.3	deg_C
ch 04	93.1	deg_C
ch 05	93.2	deg_C
ch 06	92.9	deg_C
ch 07	93.5	deg_C
ch 08	93.5	deg_C
ch 09	93.7	deg_C
ch 10	93.5	deg_C
ch 11	22.6	deg_C
ch 12	22.5	deg_C
ch 13	22.1	deg_C
ch 14	23.4	deg_C
ch 15	23.3	deg_C
ch 16	93.5	deg_C
ch 17	93.4	deg_C
ch 18	93.3	deg_C
ch 19	93.5	deg_C

DAY 2 TEST
60°C, 69°C, 77°C,
85°C, 93°C

FIGURE D-3: DAY 2 [redacted] TEMPERATURE TRANSITION SURVEY MSN: -100/ 349



TRIAL TEST RUN

GSG 32466 TEST

DATE: 11-26-91 to 11-27-91

DAY 3; 11-27-91
STEP-STRESS TRIAL TEST

12:10 START PLOT

```
PLOT No.  1 IS CHANNEL  1
PLOT No.  2 IS CHANNEL  2
PLOT No.  3 IS CHANNEL  3
PLOT No.  4 IS CHANNEL  4
PLOT No.  5 IS CHANNEL  5
PLOT No.  6 IS CHANNEL  7
PLOT No.  7 IS CHANNEL  9
PLOT No.  9 IS CHANNEL  10
PLOT No.  9 IS CHANNEL  17
PLOT No.  1 IS CHANNEL  1
PLOT No.  2 IS CHANNEL  2
PLOT No.  3 IS CHANNEL  3
PLOT No.  4 IS CHANNEL  4
PLOT No.  5 IS CHANNEL  5
PLOT No.  6 IS CHANNEL  7
PLOT No.  7 IS CHANNEL  9
PLOT No.  9 IS CHANNEL  10
PLOT No.  9 IS CHANNEL .17
```

EXP 01--SCAN 001--11 27 12 10 01
[redacted] Thermal Survey/Mueller"

ch 01	91.6	deg_C
ch 02	91.3	deg_C
ch 03	91.7	deg_C
ch 04	91.6	deg_C
ch 05	91.6	deg_C
ch 06	91.6	deg_C
ch 07	91.5	deg_C
ch 08	91.6	deg_C
ch 09	91.6	deg_C
ch 10	91.7	deg_C
ch 11	22.6	deg_C
ch 12	22.7	deg_C
ch 13	22.2	deg_C
ch 14	23.2	deg_C
ch 15	23.6	deg_C
ch 16	91.8	deg_C
ch 17	91.7	deg_C
ch 18	91.5	deg_C
ch 19	91.7	deg_C

EXP 01--SCAN 008--11 27 12 17 01
[redacted] Thermal Survey/Mueller"

ch 01	91.6	deg_C
ch 02	91.3	deg_C
ch 03	91.7	deg_C
ch 04	91.6	deg_C
ch 05	91.6	deg_C
ch 06	91.6	deg_C
ch 07	91.5	deg_C
ch 08	91.6	deg_C
ch 09	91.6	deg_C
ch 10	91.7	deg_C
ch 11	22.4	deg_C
ch 12	22.5	deg_C
ch 13	22.4	deg_C
ch 14	23.3	deg_C
ch 15	23.4	deg_C
ch 16	91.8	deg_C
ch 17	91.7	deg_C
ch 18	91.5	deg_C
ch 19	91.7	deg_C

EXP 01--SCAN 012--11 27 12 21 01
[redacted] Thermal Survey/Mueller"

ch 01	91.6	deg_C
ch 02	91.3	deg_C
ch 03	91.7	deg_C
ch 04	91.6	deg_C
ch 05	91.6	deg_C
ch 06	91.6	deg_C
ch 07	91.5	deg_C
ch 08	91.6	deg_C
ch 09	91.6	deg_C
ch 10	91.7	deg_C
ch 11	22.7	deg_C
ch 12	22.4	deg_C
ch 13	21.9	deg_C
ch 14	23.2	deg_C
ch 15	23.4	deg_C
ch 16	91.9	deg_C
ch 17	91.7	deg_C
ch 18	91.5	deg_C
ch 19	91.7	deg_C

EXP 01--SCAN 016--11 27 12 25 01
[redacted] Thermal Survey/Mueller"

ch 01	91.6	deg_C
ch 02	91.1	deg_C
ch 03	91.7	deg_C
ch 04	91.5	deg_C
ch 05	91.6	deg_C
ch 06	91.6	deg_C
ch 07	91.6	deg_C
ch 08	91.6	deg_C
ch 09	91.6	deg_C
ch 10	91.7	deg_C
ch 11	22.5	deg_C
ch 12	22.5	deg_C
ch 13	22.2	deg_C
ch 14	23.2	deg_C
ch 15	23.6	deg_C
ch 16	91.8	deg_C
ch 17	91.7	deg_C
ch 18	91.5	deg_C
ch 19	91.7	deg_C

EXP 01--SCAN 020--11 27 12 28 01
[redacted] Thermal Survey/Mueller"

ch 01	91.6	deg_C
ch 02	91.1	deg_C
ch 03	91.7	deg_C
ch 04	91.5	deg_C
ch 05	91.6	deg_C
ch 06	91.6	deg_C
ch 07	91.5	deg_C
ch 08	91.6	deg_C
ch 09	91.5	deg_C
ch 10	91.7	deg_C
ch 11	22.4	deg_C
ch 12	22.3	deg_C
ch 13	21.9	deg_C
ch 14	23.2	deg_C
ch 15	23.1	deg_C
ch 16	91.8	deg_C
ch 17	91.7	deg_C
ch 18	91.5	deg_C
ch 19	91.7	deg_C

EXP 01--SCAN 024--11 27 12 33 01
[redacted] Thermal Survey/Mueller"

ch 01	91.6	deg_C
ch 02	91.2	deg_C
ch 03	91.7	deg_C
ch 04	91.5	deg_C
ch 05	91.6	deg_C
ch 06	91.6	deg_C
ch 07	91.6	deg_C
ch 08	91.8	deg_C
ch 09	91.6	deg_C
ch 10	91.7	deg_C
ch 11	22.3	deg_C
ch 12	22.4	deg_C
ch 13	22.0	deg_C
ch 14	23.1	deg_C
ch 15	23.4	deg_C
ch 16	91.8	deg_C
ch 17	91.7	deg_C
ch 18	91.5	deg_C
ch 19	91.7	deg_C

EXP 01--SCAN 028--11 27 12 37 01
[redacted] Thermal Survey/Mueller"

ch 01	91.6	deg_C
ch 02	91.1	deg_C
ch 03	91.7	deg_C
ch 04	91.5	deg_C
ch 05	91.6	deg_C
ch 06	91.6	deg_C
ch 07	91.6	deg_C
ch 08	91.6	deg_C
ch 09	91.6	deg_C
ch 10	91.7	deg_C
ch 11	22.6	deg_C
ch 12	22.5	deg_C
ch 13	22.1	deg_C
ch 14	23.2	deg_C
ch 15	23.6	deg_C
ch 16	91.8	deg_C
ch 17	91.7	deg_C
ch 18	91.5	deg_C
ch 19	91.7	deg_C

12:40 AT LEVEL 4; TURN UUT PWR ON
(+93°C Chamber, +102°C Comp.)

EXP 01--SCAN 032--11 27 12 41 01
[redacted] Thermal Survey/Mueller"

ch 01	91.6	deg_C
ch 02	91.0	deg_C
ch 03	93.5	deg_C
ch 04	90.2	deg_C
ch 05	93.1	deg_C
ch 06	92.1	deg_C
ch 07	95.9	deg_C
ch 08	92.0	deg_C
ch 09	95.9	deg_C
ch 10	95.8	deg_C
ch 11	22.4	deg_C
ch 12	22.3	deg_C
ch 13	21.9	deg_C
ch 14	23.1	deg_C
ch 15	23.0	deg_C
ch 16	97.6	deg_C
ch 17	102.0	deg_C
ch 18	92.9	deg_C
ch 19	93.4	deg_C

EXP 01--SCAN 036--11 27 12 45 01
[redacted] Thermal Survey/Mueller"

ch 01	93.9	deg_C
ch 02	91.2	deg_C
ch 03	98.8	deg_C
ch 04	95.0	deg_C
ch 05	97.8	deg_C
ch 06	95.0	deg_C
ch 07	99.9	deg_C
ch 08	94.7	deg_C
ch 09	103.1	deg_C
ch 10	101.6	deg_C
ch 11	22.4	deg_C
ch 12	22.5	deg_C
ch 13	22.0	deg_C
ch 14	23.1	deg_C
ch 15	23.3	deg_C
ch 16	106.4	deg_C
ch 17	110.2	deg_C
ch 18	96.4	deg_C
ch 19	97.3	deg_C

EXP 01--SCAN 040--11 27 12 49 01
[redacted] Thermal Survey/Mueller"

ch 01	95.5	deg_C
ch 02	91.3	deg_C
ch 03	101.5	deg_C
ch 04	97.5	deg_C
ch 05	100.4	deg_C
ch 06	96.9	deg_C
ch 07	102.3	deg_C
ch 08	97.2	deg_C
ch 09	106.9	deg_C
ch 10	104.1	deg_C
ch 11	22.3	deg_C
ch 12	22.5	deg_C
ch 13	22.1	deg_C
ch 14	23.2	deg_C
ch 15	23.3	deg_C
ch 16	109.9	deg_C
ch 17	113.3	deg_C
ch 18	99.8	deg_C
ch 19	99.9	deg_C

EXP 01--SCAN 044--11 27 12 53 01
[redacted] Thermal Survey/Mueller"

ch 01	96.4	deg_C
ch 02	91.2	deg_C
ch 03	103.2	deg_C
ch 04	98.8	deg_C
ch 05	101.9	deg_C
ch 06	98.1	deg_C
ch 07	103.9	deg_C
ch 08	98.8	deg_C
ch 09	108.8	deg_C
ch 10	106.5	deg_C
ch 11	22.4	deg_C
ch 12	22.5	deg_C
ch 13	22.2	deg_C
ch 14	23.2	deg_C
ch 15	23.3	deg_C
ch 16	111.5	deg_C
ch 17	114.9	deg_C
ch 18	100.4	deg_C
ch 19	101.5	deg_C

EXP 01--SCAN 048--11 27 12 57 01
[redacted] Thermal Survey/Mueller"

ch 01	97.8	deg_C
ch 02	91.3	deg_C
ch 03	104.1	deg_C
ch 04	99.7	deg_C
ch 05	102.8	deg_C
ch 06	98.9	deg_C
ch 07	104.9	deg_C
ch 08	99.9	deg_C
ch 09	110.0	deg_C
ch 10	107.9	deg_C
ch 11	22.4	deg_C
ch 12	22.6	deg_C
ch 13	22.3	deg_C
ch 14	23.2	deg_C
ch 15	23.7	deg_C
ch 16	112.6	deg_C
ch 17	115.9	deg_C
ch 18	101.4	deg_C
ch 19	102.5	deg_C

EXP 01--SCAN 052--11 27 13 01 01
[redacted] Thermal Survey/Mueller"

ch 01	97.3	deg_C
ch 02	91.3	deg_C
ch 03	104.7	deg_C
ch 04	100.2	deg_C
ch 05	103.3	deg_C
ch 06	99.3	deg_C
ch 07	105.8	deg_C
ch 08	100.5	deg_C
ch 09	110.7	deg_C
ch 10	108.3	deg_C
ch 11	22.4	deg_C
ch 12	22.4	deg_C
ch 13	22.0	deg_C
ch 14	23.2	deg_C
ch 15	23.3	deg_C
ch 16	113.2	deg_C
ch 17	116.5	deg_C
ch 18	101.5	deg_C
ch 19	103.2	deg_C

EXP 01--SCAN 055--11 27 13 05 01
[redacted] Thermal Survey/Mueller"

ch 01	97.5	deg_C
ch 02	91.5	deg_C
ch 03	105.0	deg_C
ch 04	100.7	deg_C
ch 05	103.8	deg_C
ch 06	99.9	deg_C
ch 07	107.4	deg_C
ch 08	105.5	deg_C
ch 09	111.1	deg_C
ch 10	108.2	deg_C
ch 11	22.5	deg_C
ch 12	22.5	deg_C
ch 13	22.0	deg_C
ch 14	23.2	deg_C
ch 15	23.5	deg_C
ch 16	113.5	deg_C
ch 17	116.9	deg_C
ch 18	102.4	deg_C
ch 19	[illegible]	deg_C

EXP 01--SCAN 059--11 27 13 09 01
[redacted] Thermal Survey/Mueller"

ch 01	97.6	deg_C
ch 02	91.3	deg_C
ch 03	105.2	deg_C
ch 04	101.4	deg_C
ch 05	103.8	deg_C
ch 06	100.3	deg_C
ch 07	105.7	deg_C
ch 08	105.8	deg_C
ch 09	111.3	deg_C
ch 10	108.5	deg_C
ch 11	22.7	deg_C
ch 12	22.4	deg_C
ch 13	22.2	deg_C
ch 14	23.2	deg_C
ch 15	22.8	deg_C
ch 16	113.6	deg_C
ch 17	117.1	deg_C
ch 18	103.2	deg_C
ch 19	104.2	deg_C

START DATA AVG.

EXP 01--SCAN 061--11 27 13 13 01
[redacted] Thermal Survey/Mueller"

ch 01	97.9	deg_C
ch 02	91.5	deg_C
ch 03	105.4	deg_C
ch 04	101.6	deg_C
ch 05	104.0	deg_C
ch 06	100.5	deg_C
ch 07	107.0	deg_C
ch 08	106.9	deg_C
ch 09	111.5	deg_C
ch 10	108.9	deg_C
ch 11	22.4	deg_C
ch 12	22.3	deg_C
ch 13	22.0	deg_C
ch 14	23.1	deg_C
ch 15	22.7	deg_C
ch 16	113.8	deg_C
ch 17	117.3	deg_C
ch 18	103.5	deg_C
ch 19	104.6	deg_C

EXP 01--SCAN 063--11 27 13 17 01
[redacted] Thermal Survey/Mueller"

ch 01	98.0	deg_C
ch 02	91.3	deg_C
ch 03	105.6	deg_C
ch 04	101.7	deg_C
ch 05	104.2	deg_C
ch 06	100.5	deg_C
ch 07	107.2	deg_C
ch 08	107.0	deg_C
ch 09	111.7	deg_C
ch 10	108.7	deg_C
ch 11	22.5	deg_C
ch 12	22.2	deg_C
ch 13	22.0	deg_C
ch 14	23.1	deg_C
ch 15	22.5	deg_C
ch 16	113.9	deg_C
ch 17	117.4	deg_C
ch 18	103.7	deg_C
ch 19	104.8	deg_C

EXP 01--SCAN 072--11 27 13 21 01
[redacted] Thermal Survey/Mueller"

ch 01	98.1	deg_C
ch 02	91.2	deg_C
ch 03	105.6	deg_C
ch 04	101.9	deg_C
ch 05	104.2	deg_C
ch 06	100.7	deg_C
ch 07	107.4	deg_C
ch 08	107.1	deg_C
ch 09	111.8	deg_C
ch 10	108.8	deg_C
ch 11	22.4	deg_C
ch 12	22.0	deg_C
ch 13	21.6	deg_C
ch 14	23.0	deg_C
ch 15	22.4	deg_C
ch 16	114.0	deg_C
ch 17	117.6	deg_C
ch 18	103.8	deg_C
ch 19	104.9	deg_C

EXP 01--SCAN 084--11 27 13 33 01
[redacted] Thermal Survey/Mueller"

ch 01	98.1	deg_C
ch 02	91.4	deg_C
ch 03	105.6	deg_C
ch 04	101.9	deg_C
ch 05	104.3	deg_C
ch 06	100.9	deg_C
ch 07	106.4	deg_C
ch 08	107.4	deg_C
ch 09	111.8	deg_C
ch 10	108.8	deg_C
ch 11	22.3	deg_C
ch 12	22.4	deg_C
ch 13	21.8	deg_C
ch 14	23.0	deg_C
ch 15	23.1	deg_C
ch 16	114.2	deg_C
ch 17	117.6	deg_C
ch 18	103.8	deg_C
ch 19	104.9	deg_C

EXP 01--SCAN 095--11 27 13 45 01
[redacted] Thermal Survey/Mueller"

ch 01	97.9	deg_C
ch 02	91.4	deg_C
ch 03	104.4	deg_C
ch 04	101.5	deg_C
ch 05	103.1	deg_C
ch 06	100.3	deg_C
ch 07	105.8	deg_C
ch 08	106.8	deg_C
ch 09	109.9	deg_C
ch 10	107.4	deg_C
ch 11	22.4	deg_C
ch 12	22.5	deg_C
ch 13	22.1	deg_C
ch 14	23.2	deg_C
ch 15	23.2	deg_C
ch 16	112.1	deg_C
ch 17	114.2	deg_C
ch 18	103.3	deg_C
ch 19	104.3	deg_C

EXP 01--SCAN 075--11 27 13 25 01
[redacted] Thermal Survey/Mueller"

ch 01	98.1	deg_C
ch 02	91.3	deg_C
ch 03	105.7	deg_C
ch 04	101.9	deg_C
ch 05	104.3	deg_C
ch 06	100.8	deg_C
ch 07	107.3	deg_C
ch 08	107.2	deg_C
ch 09	111.8	deg_C
ch 10	108.8	deg_C
ch 11	22.4	deg_C
ch 12	22.0	deg_C
ch 13	21.6	deg_C
ch 14	22.8	deg_C
ch 15	22.3	deg_C
ch 16	114.1	deg_C
ch 17	117.6	deg_C
ch 18	103.8	deg_C
ch 19	104.9	deg_C

EXP 01--SCAN 088--11 27 13 37 01
[redacted] Thermal Survey/Mueller"

ch 01	98.1	deg_C
ch 02	91.4	deg_C
ch 03	105.8	deg_C
ch 04	102.0	deg_C
ch 05	104.3	deg_C
ch 06	100.8	deg_C
ch 07	107.5	deg_C
ch 08	107.4	deg_C
ch 09	111.8	deg_C
ch 10	108.8	deg_C
ch 11	22.3	deg_C
ch 12	22.2	deg_C
ch 13	21.8	deg_C
ch 14	23.0	deg_C
ch 15	22.9	deg_C
ch 16	114.2	deg_C
ch 17	117.6	deg_C
ch 18	103.8	deg_C
ch 19	105.0	deg_C

EXP 01--SCAN 100--11 27 13 49 01
[redacted] Thermal Survey/Mueller"

ch 01	97.8	deg_C
ch 02	91.4	deg_C
ch 03	103.8	deg_C
ch 04	101.8	deg_C
ch 05	102.8	deg_C
ch 06	99.8	deg_C
ch 07	105.1	deg_C
ch 08	105.4	deg_C
ch 09	109.8	deg_C
ch 10	105.7	deg_C
ch 11	22.6	deg_C
ch 12	22.7	deg_C
ch 13	22.1	deg_C
ch 14	23.2	deg_C
ch 15	23.6	deg_C
ch 16	111.2	deg_C
ch 17	113.3	deg_C
ch 18	103.3	deg_C
ch 19	103.8	deg_C

13:38 LEAVE TEMP AT LEVEL 4
REDUCE VOLTAGES TO LEVEL 0

EXP 01--SCAN 060--11 27 13 29 01
[redacted] Thermal Survey/Mueller"

ch 01	98.1	deg_C
ch 02	91.2	deg_C
ch 03	105.6	deg_C
ch 04	101.9	deg_C
ch 05	104.3	deg_C
ch 06	100.9	deg_C
ch 07	106.7	deg_C
ch 08	107.3	deg_C
ch 09	111.8	deg_C
ch 10	108.9	deg_C
ch 11	22.2	deg_C
ch 12	22.2	deg_C
ch 13	21.9	deg_C
ch 14	23.0	deg_C
ch 15	22.7	deg_C
ch 16	114.1	deg_C
ch 17	117.6	deg_C
ch 18	103.8	deg_C
ch 19	104.9	deg_C

EXP 01--SCAN 082--11 27 13 41 01
[redacted] Thermal Survey/Mueller"

ch 01	98.1	deg_C
ch 02	91.4	deg_C
ch 03	105.7	deg_C
ch 04	101.9	deg_C
ch 05	104.2	deg_C
ch 06	100.8	deg_C
ch 07	107.2	deg_C
ch 08	107.3	deg_C
ch 09	111.7	deg_C
ch 10	108.8	deg_C
ch 11	22.4	deg_C
ch 12	22.4	deg_C
ch 13	22.0	deg_C
ch 14	23.0	deg_C
ch 15	23.3	deg_C
ch 16	114.1	deg_C
ch 17	116.8	deg_C
ch 18	103.9	deg_C
ch 19	105.1	deg_C

EXP 01--SCAN 104--11 27 13 53 01
[redacted] Thermal Survey/Mueller"

ch 01	97.3	deg_C
ch 02	91.4	deg_C
ch 03	103.2	deg_C
ch 04	100.7	deg_C
ch 05	102.1	deg_C
ch 06	98.8	deg_C
ch 07	104.7	deg_C
ch 08	105.0	deg_C
ch 09	108.5	deg_C
ch 10	105.2	deg_C
ch 11	22.5	deg_C
ch 12	22.6	deg_C
ch 13	22.5	deg_C
ch 14	23.3	deg_C
ch 15	24.1	deg_C
ch 16	110.6	deg_C
ch 17	112.9	deg_C
ch 18	102.4	deg_C
ch 19	103.4	deg_C

END DATA AVG.

START DATA AVG.

EXP 01--SCAN 109--11 27 13 57 01
[redacted] Thermal Survey/Mueller"

ch 01	97.2	deg_C
ch 02	91.3	deg_C
ch 03	103.0	deg_C
ch 04	100.5	deg_C
ch 05	101.9	deg_C
ch 06	99.4	deg_C
ch 07	104.5	deg_C
ch 08	105.9	deg_C
ch 09	108.2	deg_C
ch 10	105.0	deg_C
ch 11	22.8	deg_C
ch 12	22.8	deg_C
ch 13	22.4	deg_C
ch 14	23.3	deg_C
ch 15	23.8	deg_C
ch 16	110.5	deg_C
ch 17	112.7	deg_C
ch 18	102.2	deg_C
ch 19	103.2	deg_C

EXP 01--SCAN 110--11 27 14 09 01
[redacted] Thermal Survey/Mueller"

ch 01	97.0	deg_C
ch 02	91.3	deg_C
ch 03	102.7	deg_C
ch 04	100.3	deg_C
ch 05	101.7	deg_C
ch 06	99.3	deg_C
ch 07	104.2	deg_C
ch 08	105.5	deg_C
ch 09	108.0	deg_C
ch 10	105.7	deg_C
ch 11	22.8	deg_C
ch 12	22.7	deg_C
ch 13	22.3	deg_C
ch 14	23.3	deg_C
ch 15	23.7	deg_C
ch 16	110.2	deg_C
ch 17	112.5	deg_C
ch 18	101.9	deg_C
ch 19	102.8	deg_C

14:20 INCREASE VOLTAGES BACK TO LEVEL 4 FROM LEVEL 0

EXP 01--SCAN 102--11 27 14 21 01
[redacted] Thermal Survey/Mueller"

ch 01	97.0	deg_C
ch 02	91.3	deg_C
ch 03	102.7	deg_C
ch 04	100.3	deg_C
ch 05	101.7	deg_C
ch 06	99.2	deg_C
ch 07	104.1	deg_C
ch 08	105.4	deg_C
ch 09	107.9	deg_C
ch 10	105.7	deg_C
ch 11	22.8	deg_C
ch 12	23.0	deg_C
ch 13	22.5	deg_C
ch 14	23.4	deg_C
ch 15	24.1	deg_C
ch 16	110.2	deg_C
ch 17	112.4	deg_C
ch 18	101.9	deg_C
ch 19	102.9	deg_C

EXP 01--SCAN 111--11 27 14 01 01
[redacted] Thermal Survey/Mueller"

ch 01	97.1	deg_C
ch 02	91.4	deg_C
ch 03	102.8	deg_C
ch 04	100.4	deg_C
ch 05	101.8	deg_C
ch 06	99.3	deg_C
ch 07	104.3	deg_C
ch 08	105.8	deg_C
ch 09	108.1	deg_C
ch 10	105.8	deg_C
ch 11	22.8	deg_C
ch 12	22.8	deg_C
ch 13	22.4	deg_C
ch 14	23.3	deg_C
ch 15	24.2	deg_C
ch 16	110.4	deg_C
ch 17	112.6	deg_C
ch 18	102.1	deg_C
ch 19	103.1	deg_C

EXP 01--SCAN 104--11 27 14 13 01
[redacted] Thermal Survey/Mueller"

ch 01	97.0	deg_C
ch 02	91.4	deg_C
ch 03	102.7	deg_C
ch 04	100.2	deg_C
ch 05	101.7	deg_C
ch 06	99.2	deg_C
ch 07	104.1	deg_C
ch 08	105.5	deg_C
ch 09	107.9	deg_C
ch 10	105.7	deg_C
ch 11	22.8	deg_C
ch 12	23.0	deg_C
ch 13	22.5	deg_C
ch 14	23.4	deg_C
ch 15	24.1	deg_C
ch 16	110.2	deg_C
ch 17	112.4	deg_C
ch 18	101.9	deg_C
ch 19	102.9	deg_C

EXP 01--SCAN 116--11 27 14 05 01
[redacted] Thermal Survey/Mueller"

ch 01	97.0	deg_C
ch 02	91.5	deg_C
ch 03	102.8	deg_C
ch 04	100.3	deg_C
ch 05	101.8	deg_C
ch 06	99.3	deg_C
ch 07	104.2	deg_C
ch 08	105.5	deg_C
ch 09	108.0	deg_C
ch 10	105.8	deg_C
ch 11	22.5	deg_C
ch 12	22.9	deg_C
ch 13	22.4	deg_C
ch 14	23.3	deg_C
ch 15	23.9	deg_C
ch 16	110.3	deg_C
ch 17	112.5	deg_C
ch 18	102.0	deg_C
ch 19	103.0	deg_C

EXP 01--SCAN 108--11 27 14 17 01
[redacted] Thermal Survey/Mueller"

ch 01	97.0	deg_C
ch 02	91.3	deg_C
ch 03	102.7	deg_C
ch 04	100.2	deg_C
ch 05	101.7	deg_C
ch 06	99.2	deg_C
ch 07	104.1	deg_C
ch 08	105.5	deg_C
ch 09	107.9	deg_C
ch 10	105.7	deg_C
ch 11	22.8	deg_C
ch 12	22.9	deg_C
ch 13	22.5	deg_C
ch 14	23.4	deg_C
ch 15	24.0	deg_C
ch 16	110.2	deg_C
ch 17	112.4	deg_C
ch 18	101.9	deg_C
ch 19	102.9	deg_C

EXP 01--SCAN 105--11 27 14 25 01
[redacted] Thermal Survey/Mueller"

ch 01	97.0	deg_C
ch 02	91.4	deg_C
ch 03	102.8	deg_C
ch 04	100.2	deg_C
ch 05	101.8	deg_C
ch 06	99.2	deg_C
ch 07	104.5	deg_C
ch 08	105.4	deg_C
ch 09	108.3	deg_C
ch 10	105.8	deg_C
ch 11	22.8	deg_C
ch 12	22.5	deg_C
ch 13	22.1	deg_C
ch 14	23.3	deg_C
ch 15	23.4	deg_C
ch 16	110.4	deg_C
ch 17	112.5	deg_C
ch 18	101.9	deg_C
ch 19	102.9	deg_C

END DATA AVG. (SMALL SAMPLE)

TRIAL TEST RUN

070

EXP 01--SCAN 140--11 27 14 29 01
[redacted] Thermal Survey/Mueller"

ch 01	97.3	deg_C
ch 02	91.4	deg_C
ch 03	104.1	deg_C
ch 04	100.7	deg_C
ch 05	102.9	deg_C
ch 06	99.7	deg_C
ch 07	106.0	deg_C
ch 08	105.8	deg_C
ch 09	110.0	deg_C
ch 10	107.0	deg_C
ch 11	23.7	deg_C
ch 12	23.0	deg_C
ch 13	22.4	deg_C
ch 14	23.4	deg_C
ch 15	23.8	deg_C
ch 16	112.3	deg_C
ch 17	115.9	deg_C
ch 18	102.5	deg_C
ch 19	103.5	deg_C

EXP 01--SCAN 142--11 27 14 41 01
[redacted] Thermal Survey/Mueller"

ch 01	103.3	deg_C
ch 02	98.1	deg_C
ch 03	110.1	deg_C
ch 04	106.2	deg_C
ch 05	108.6	deg_C
ch 06	105.3	deg_C
ch 07	111.1	deg_C
ch 08	110.7	deg_C
ch 09	115.7	deg_C
ch 10	111.7	deg_C
ch 11	23.6	deg_C
ch 12	23.1	deg_C
ch 13	22.5	deg_C
ch 14	25.0	deg_C
ch 15	24.0	deg_C
ch 16	118.4	deg_C
ch 17	122.4	deg_C
ch 18	107.6	deg_C
ch 19	108.8	deg_C

EXP 01--SCAN 154--11 27 14 53 01
[redacted] Thermal Survey/Mueller"

ch 01	105.2	deg_C
ch 02	98.7	deg_C
ch 03	113.1	deg_C
ch 04	109.0	deg_C
ch 05	111.5	deg_C
ch 06	107.9	deg_C
ch 07	114.5	deg_C
ch 08	113.9	deg_C
ch 09	118.2	deg_C
ch 10	114.5	deg_C
ch 11	23.8	deg_C
ch 12	23.8	deg_C
ch 13	22.4	deg_C
ch 14	24.1	deg_C
ch 15	23.6	deg_C
ch 16	121.5	deg_C
ch 17	125.4	deg_C
ch 18	110.6	deg_C
ch 19	112.1	deg_C

14:32 CONTINUE INCREASING VOLTAGES TO LEVEL 5; RAMP TEMP TO LEVEL 5 (+101°C & +110°C COMP.)

EXP 01--SCAN 144--11 27 14 33 01
[redacted] Thermal Survey/Mueller"

ch 01	97.7	deg_C
ch 02	92.5	deg_C
ch 03	104.8	deg_C
ch 04	101.2	deg_C
ch 05	103.5	deg_C
ch 06	100.3	deg_C
ch 07	106.5	deg_C
ch 08	106.3	deg_C
ch 09	110.8	deg_C
ch 10	107.7	deg_C
ch 11	23.6	deg_C
ch 12	23.8	deg_C
ch 13	23.3	deg_C
ch 14	23.3	deg_C
ch 15	23.5	deg_C
ch 16	113.1	deg_C
ch 17	116.8	deg_C
ch 18	103.2	deg_C
ch 19	104.2	deg_C

EXP 01--SCAN 156--11 27 14 45 01
[redacted] Thermal Survey/Mueller"

ch 01	104.2	deg_C
ch 02	98.3	deg_C
ch 03	111.5	deg_C
ch 04	107.5	deg_C
ch 05	110.0	deg_C
ch 06	106.5	deg_C
ch 07	112.7	deg_C
ch 08	112.2	deg_C
ch 09	117.4	deg_C
ch 10	113.1	deg_C
ch 11	23.3	deg_C
ch 12	22.8	deg_C
ch 13	22.2	deg_C
ch 14	24.5	deg_C
ch 15	23.7	deg_C
ch 16	119.8	deg_C
ch 17	123.8	deg_C
ch 18	109.3	deg_C
ch 19	110.4	deg_C

EXP 01--SCAN 158--11 27 14 57 01
[redacted] Thermal Survey/Mueller"

ch 01	105.5	deg_C
ch 02	98.8	deg_C
ch 03	113.5	deg_C
ch 04	109.4	deg_C
ch 05	111.9	deg_C
ch 06	108.2	deg_C
ch 07	115.0	deg_C
ch 08	114.4	deg_C
ch 09	119.7	deg_C
ch 10	114.9	deg_C
ch 11	22.8	deg_C
ch 12	22.8	deg_C
ch 13	22.1	deg_C
ch 14	23.8	deg_C
ch 15	23.2	deg_C
ch 16	121.9	deg_C
ch 17	126.7	deg_C
ch 18	111.4	deg_C
ch 19	112.5	deg_C

EXP 01--SCAN 146--11 27 14 37 01
[redacted] Thermal Survey/Mueller"

ch 01	101.7	deg_C
ch 02	97.3	deg_C
ch 03	107.9	deg_C
ch 04	104.2	deg_C
ch 05	106.5	deg_C
ch 06	103.5	deg_C
ch 07	109.9	deg_C
ch 08	109.6	deg_C
ch 09	113.3	deg_C
ch 10	109.5	deg_C
ch 11	23.9	deg_C
ch 12	22.8	deg_C
ch 13	22.4	deg_C
ch 14	25.3	deg_C
ch 15	23.5	deg_C
ch 16	116.2	deg_C
ch 17	120.2	deg_C
ch 18	105.9	deg_C
ch 19	106.6	deg_C

EXP 01--SCAN 160--11 27 14 49 01
[redacted] Thermal Survey/Mueller"

ch 01	104.8	deg_C
ch 02	98.5	deg_C
ch 03	112.4	deg_C
ch 04	108.4	deg_C
ch 05	110.9	deg_C
ch 06	107.3	deg_C
ch 07	113.7	deg_C
ch 08	113.3	deg_C
ch 09	118.5	deg_C
ch 10	114.8	deg_C
ch 11	23.3	deg_C
ch 12	22.9	deg_C
ch 13	22.3	deg_C
ch 14	24.3	deg_C
ch 15	23.7	deg_C
ch 16	120.8	deg_C
ch 17	124.7	deg_C
ch 18	110.3	deg_C
ch 19	111.4	deg_C

EXP 01--SCAN 172--11 27 15 01 01
[redacted] Thermal Survey/Mueller"

ch 01	105.8	deg_C
ch 02	98.8	deg_C
ch 03	113.8	deg_C
ch 04	109.7	deg_C
ch 05	112.1	deg_C
ch 06	108.5	deg_C
ch 07	115.3	deg_C
ch 08	114.7	deg_C
ch 09	120.0	deg_C
ch 10	115.1	deg_C
ch 11	23.8	deg_C
ch 12	22.8	deg_C
ch 13	22.2	deg_C
ch 14	23.8	deg_C
ch 15	23.5	deg_C
ch 16	122.1	deg_C
ch 17	126.8	deg_C
ch 18	111.7	deg_C
ch 19	112.8	deg_C

START DATA AVG.

EXP 01--SCAN 176--11 27 15 05 01
[redacted] Thermal Survey/Mueller"

ch 01	105.8	deg_C
ch 02	99.8	deg_C
ch 03	114.0	deg_C
ch 04	108.9	deg_C
ch 05	112.3	deg_C
ch 06	109.6	deg_C
ch 07	115.5	deg_C
ch 08	114.8	deg_C
ch 09	120.2	deg_C
ch 10	115.3	deg_C
ch 11	22.8	deg_C
ch 12	22.5	deg_C
ch 13	22.2	deg_C
ch 14	23.8	deg_C
ch 15	23.4	deg_C
ch 16	122.3	deg_C
ch 17	126.2	deg_C
ch 18	111.9	deg_C
ch 19	113.0	deg_C

EXP 01--SCAN 180--11 27 15 09 01
[redacted] Thermal Survey/Mueller"

ch 01	105.9	deg_C
ch 02	99.8	deg_C
ch 03	114.1	deg_C
ch 04	110.0	deg_C
ch 05	112.4	deg_C
ch 06	108.7	deg_C
ch 07	115.6	deg_C
ch 08	115.0	deg_C
ch 09	120.3	deg_C
ch 10	115.4	deg_C
ch 11	22.9	deg_C
ch 12	22.7	deg_C
ch 13	22.3	deg_C
ch 14	23.7	deg_C
ch 15	23.4	deg_C
ch 16	122.5	deg_C
ch 17	126.3	deg_C
ch 18	112.0	deg_C
ch 19	113.2	deg_C

EXP 01--SCAN 184--11 27 15 13 01
[redacted] Thermal Survey/Mueller"

ch 01	106.0	deg_C
ch 02	99.0	deg_C
ch 03	114.1	deg_C
ch 04	110.0	deg_C
ch 05	112.4	deg_C
ch 06	108.8	deg_C
ch 07	115.7	deg_C
ch 08	115.1	deg_C
ch 09	120.4	deg_C
ch 10	115.5	deg_C
ch 11	22.9	deg_C
ch 12	22.7	deg_C
ch 13	22.1	deg_C
ch 14	23.6	deg_C
ch 15	23.6	deg_C
ch 16	122.6	deg_C
ch 17	126.3	deg_C
ch 18	112.1	deg_C
ch 19	113.2	deg_C

EXP 01--SCAN 188--11 27 15 17 01
[redacted] Thermal Survey/Mueller"

ch 01	105.9	deg_C
ch 02	99.8	deg_C
ch 03	114.2	deg_C
ch 04	110.1	deg_C
ch 05	112.5	deg_C
ch 06	108.9	deg_C
ch 07	115.8	deg_C
ch 08	115.1	deg_C
ch 09	120.5	deg_C
ch 10	115.5	deg_C
ch 11	22.9	deg_C
ch 12	22.8	deg_C
ch 13	22.2	deg_C
ch 14	23.6	deg_C
ch 15	23.4	deg_C
ch 16	122.6	deg_C
ch 17	126.4	deg_C
ch 18	112.1	deg_C
ch 19	113.3	deg_C

EXP 01--SCAN 192--11 27 15 21 01
[redacted] Thermal Survey/Mueller"

ch 01	106.0	deg_C
ch 02	99.8	deg_C
ch 03	114.2	deg_C
ch 04	110.1	deg_C
ch 05	112.5	deg_C
ch 06	108.9	deg_C
ch 07	115.8	deg_C
ch 08	115.1	deg_C
ch 09	120.5	deg_C
ch 10	115.5	deg_C
ch 11	22.9	deg_C
ch 12	22.7	deg_C
ch 13	22.1	deg_C
ch 14	23.6	deg_C
ch 15	23.6	deg_C
ch 16	122.6	deg_C
ch 17	126.4	deg_C
ch 18	112.1	deg_C
ch 19	113.3	deg_C

EXP 01--SCAN 196--11 27 15 25 01
[redacted] Thermal Survey/Mueller"

ch 01	106.0	deg_C
ch 02	99.0	deg_C
ch 03	114.2	deg_C
ch 04	110.1	deg_C
ch 05	112.5	deg_C
ch 06	108.8	deg_C
ch 07	115.8	deg_C
ch 08	115.1	deg_C
ch 09	120.5	deg_C
ch 10	115.6	deg_C
ch 11	22.8	deg_C
ch 12	22.8	deg_C
ch 13	22.4	deg_C
ch 14	23.6	deg_C
ch 15	23.5	deg_C
ch 16	122.6	deg_C
ch 17	126.5	deg_C
ch 18	112.2	deg_C
ch 19	113.3	deg_C

EXP 01--SCAN 200--11 27 15 29 01
[redacted] Thermal Survey/Mueller"

ch 01	106.0	deg_C
ch 02	99.0	deg_C
ch 03	114.2	deg_C
ch 04	110.1	deg_C
ch 05	112.5	deg_C
ch 06	108.8	deg_C
ch 07	115.8	deg_C
ch 08	115.1	deg_C
ch 09	120.6	deg_C
ch 10	115.5	deg_C
ch 11	22.7	deg_C
ch 12	22.6	deg_C
ch 13	22.3	deg_C
ch 14	23.5	deg_C
ch 15	23.4	deg_C
ch 16	122.8	deg_C
ch 17	126.5	deg_C
ch 18	112.2	deg_C
ch 19	113.3	deg_C

EXP 01--SCAN 204--11 27 15 33 01
[redacted] Thermal Survey/Mueller"

ch 01	106.0	deg_C
ch 02	99.8	deg_C
ch 03	114.3	deg_C
ch 04	110.2	deg_C
ch 05	112.5	deg_C
ch 06	108.9	deg_C
ch 07	115.8	deg_C
ch 08	115.1	deg_C
ch 09	120.6	deg_C
ch 10	115.6	deg_C
ch 11	22.6	deg_C
ch 12	22.6	deg_C
ch 13	22.2	deg_C
ch 14	23.5	deg_C
ch 15	23.4	deg_C
ch 16	122.7	deg_C
ch 17	126.5	deg_C
ch 18	112.2	deg_C
ch 19	113.4	deg_C

15:36 DECREASE TEMP TO LEVEL 0
& MAINTAIN VOLTAGES AT LEVEL 5

EXP 01--SCAN 208--11 27 15 37 01
[redacted] Thermal Survey/Mueller"

ch 01	105.8	deg_C
ch 02	99.8	deg_C
ch 03	114.3	deg_C
ch 04	110.1	deg_C
ch 05	112.5	deg_C
ch 06	108.9	deg_C
ch 07	115.8	deg_C
ch 08	115.1	deg_C
ch 09	120.6	deg_C
ch 10	115.6	deg_C
ch 11	22.4	deg_C
ch 12	22.6	deg_C
ch 13	22.2	deg_C
ch 14	23.6	deg_C
ch 15	23.4	deg_C
ch 16	122.7	deg_C
ch 17	126.5	deg_C
ch 18	112.2	deg_C
ch 19	113.4	deg_C

END DATA AVG.

EXP 01--SCAN 212--11 27 15 41 01
[redacted] Thermal Survey/Mueller"

ch 01	97.5	deg_C
ch 02	79.9	deg_C
ch 03	110.1	deg_C
ch 04	105.5	deg_C
ch 05	108.5	deg_C
ch 06	102.9	deg_C
ch 07	113.6	deg_C
ch 08	112.4	deg_C
ch 09	116.9	deg_C
ch 10	115.1	deg_C
ch 11	23.2	deg_C
ch 12	23.3	deg_C
ch 13	22.5	deg_C
ch 14	27.0	deg_C
ch 15	24.4	deg_C
ch 16	119.1	deg_C
ch 17	123.1	deg_C
ch 18	108.4	deg_C
ch 19	110.9	deg_C

EXP 01--SCAN 224--11 27 15 50 01
[redacted] Thermal Survey/Mueller"

ch 01	74.9	deg_C
ch 02	62.9	deg_C
ch 03	85.5	deg_C
ch 04	81.9	deg_C
ch 05	84.7	deg_C
ch 06	80.0	deg_C
ch 07	90.5	deg_C
ch 08	89.1	deg_C
ch 09	95.9	deg_C
ch 10	90.9	deg_C
ch 11	24.2	deg_C
ch 12	23.3	deg_C
ch 13	22.4	deg_C
ch 14	27.1	deg_C
ch 15	24.5	deg_C
ch 16	96.2	deg_C
ch 17	99.9	deg_C
ch 18	85.1	deg_C
ch 19	86.5	deg_C

EXP 01--SCAN 236--11 27 16 05 01
[redacted] Thermal Survey/Mueller"

ch 01	68.9	deg_C
ch 02	61.9	deg_C
ch 03	78.2	deg_C
ch 04	74.7	deg_C
ch 05	77.5	deg_C
ch 06	73.5	deg_C
ch 07	81.9	deg_C
ch 08	80.9	deg_C
ch 09	87.1	deg_C
ch 10	82.9	deg_C
ch 11	24.0	deg_C
ch 12	23.1	deg_C
ch 13	22.4	deg_C
ch 14	25.7	deg_C
ch 15	24.1	deg_C
ch 16	88.7	deg_C
ch 17	92.5	deg_C
ch 18	77.2	deg_C
ch 19	78.3	deg_C

EXP 01--SCAN 216--11 27 15 46 01
[redacted] Thermal Survey/Mueller"

ch 01	95.2	deg_C
ch 02	88.3	deg_C
ch 03	109.2	deg_C
ch 04	94.9	deg_C
ch 05	99.1	deg_C
ch 06	92.8	deg_C
ch 07	105.2	deg_C
ch 08	103.4	deg_C
ch 09	111.0	deg_C
ch 10	104.3	deg_C
ch 11	24.6	deg_C
ch 12	24.1	deg_C
ch 13	22.7	deg_C
ch 14	28.0	deg_C
ch 15	25.5	deg_C
ch 16	109.4	deg_C
ch 17	113.2	deg_C
ch 18	98.8	deg_C
ch 19	101.2	deg_C

EXP 01--SCAN 228--11 27 15 57 01
[redacted] Thermal Survey/Mueller"

ch 01	72.5	deg_C
ch 02	63.0	deg_C
ch 03	83.0	deg_C
ch 04	78.5	deg_C
ch 05	81.2	deg_C
ch 06	76.9	deg_C
ch 07	86.3	deg_C
ch 08	85.2	deg_C
ch 09	91.5	deg_C
ch 10	86.9	deg_C
ch 11	22.9	deg_C
ch 12	22.9	deg_C
ch 13	22.4	deg_C
ch 14	26.9	deg_C
ch 15	24.1	deg_C
ch 16	92.5	deg_C
ch 17	96.3	deg_C
ch 18	81.3	deg_C
ch 19	82.8	deg_C

EXP 01--SCAN 240--11 27 16 09 01
[redacted] Thermal Survey/Mueller"

ch 01	69.2	deg_C
ch 02	61.6	deg_C
ch 03	78.2	deg_C
ch 04	73.8	deg_C
ch 05	76.5	deg_C
ch 06	72.6	deg_C
ch 07	80.7	deg_C
ch 08	79.8	deg_C
ch 09	86.9	deg_C
ch 10	81.9	deg_C
ch 11	23.6	deg_C
ch 12	22.9	deg_C
ch 13	22.3	deg_C
ch 14	25.3	deg_C
ch 15	23.9	deg_C
ch 16	87.7	deg_C
ch 17	91.6	deg_C
ch 18	78.1	deg_C
ch 19	77.2	deg_C

EXP 01--SCAN 220--11 27 15 48 01
[redacted] Thermal Survey/Mueller"

ch 01	78.6	deg_C
ch 02	65.2	deg_C
ch 03	92.2	deg_C
ch 04	87.2	deg_C
ch 05	90.2	deg_C
ch 06	84.6	deg_C
ch 07	95.8	deg_C
ch 08	95.1	deg_C
ch 09	102.3	deg_C
ch 10	96.4	deg_C
ch 11	24.0	deg_C
ch 12	23.6	deg_C
ch 13	22.5	deg_C
ch 14	27.7	deg_C
ch 15	25.1	deg_C
ch 16	101.6	deg_C
ch 17	105.3	deg_C
ch 18	90.9	deg_C
ch 19	92.6	deg_C

EXP 01--SCAN 232--11 27 16 01 01
[redacted] Thermal Survey/Mueller"

ch 01	71.0	deg_C
ch 02	62.4	deg_C
ch 03	80.5	deg_C
ch 04	76.2	deg_C
ch 05	78.9	deg_C
ch 06	74.8	deg_C
ch 07	83.5	deg_C
ch 08	82.5	deg_C
ch 09	88.9	deg_C
ch 10	84.4	deg_C
ch 11	24.2	deg_C
ch 12	23.2	deg_C
ch 13	22.4	deg_C
ch 14	26.2	deg_C
ch 15	24.5	deg_C
ch 16	89.1	deg_C
ch 17	94.0	deg_C
ch 18	79.8	deg_C
ch 19	80.9	deg_C

EXP 01--SCAN 244--11 27 16 13 01
[redacted] Thermal Survey/Mueller"

ch 01	58.6	deg_C
ch 02	61.2	deg_C
ch 03	77.4	deg_C
ch 04	73.1	deg_C
ch 05	75.6	deg_C
ch 06	72.0	deg_C
ch 07	79.9	deg_C
ch 08	79.1	deg_C
ch 09	85.1	deg_C
ch 10	81.2	deg_C
ch 11	23.6	deg_C
ch 12	23.0	deg_C
ch 13	22.3	deg_C
ch 14	25.0	deg_C
ch 15	23.9	deg_C
ch 16	87.0	deg_C
ch 17	90.9	deg_C
ch 18	75.3	deg_C
ch 19	76.4	deg_C

EXP 01--SCAN 249--11 27 16 17 01
[redacted] Thermal Survey/Mueller"

ch 01	68.3	deg_C
ch 02	61.2	deg_C
ch 03	76.9	deg_C
ch 04	72.6	deg_C
ch 05	75.3	deg_C
ch 06	71.5	deg_C
ch 07	78.3	deg_C
ch 08	78.5	deg_C
ch 09	84.5	deg_C
ch 10	80.6	deg_C
ch 11	23.4	deg_C
ch 12	22.9	deg_C
ch 13	22.2	deg_C
ch 14	24.6	deg_C
ch 15	23.9	deg_C
ch 16	85.4	deg_C
ch 17	89.4	deg_C
ch 18	74.7	deg_C
ch 19	75.9	deg_C

EXP 01--SCAN 250--11 27 16 23 01
[redacted] Thermal Survey/Mueller"

ch 01	67.6	deg_C
ch 02	60.8	deg_C
ch 03	76.2	deg_C
ch 04	71.9	deg_C
ch 05	74.6	deg_C
ch 06	70.9	deg_C
ch 07	76.6	deg_C
ch 08	77.7	deg_C
ch 09	83.7	deg_C
ch 10	79.9	deg_C
ch 11	23.3	deg_C
ch 12	23.0	deg_C
ch 13	22.3	deg_C
ch 14	24.4	deg_C
ch 15	24.1	deg_C
ch 16	85.7	deg_C
ch 17	89.7	deg_C
ch 18	74.8	deg_C
ch 19	76.0	deg_C

START DATA AVG.

EXP 01--SCAN 252--11 27 16 21 01
[redacted] Thermal Survey/Mueller"

ch 01	68.0	deg_C
ch 02	61.0	deg_C
ch 03	76.6	deg_C
ch 04	72.3	deg_C
ch 05	75.0	deg_C
ch 06	71.2	deg_C
ch 07	78.0	deg_C
ch 08	78.1	deg_C
ch 09	84.1	deg_C
ch 10	80.3	deg_C
ch 11	23.5	deg_C
ch 12	22.8	deg_C
ch 13	22.1	deg_C
ch 14	24.7	deg_C
ch 15	23.8	deg_C
ch 16	85.1	deg_C
ch 17	89.1	deg_C
ch 18	74.4	deg_C
ch 19	75.8	deg_C

EXP 01--SCAN 264--11 27 16 33 01
[redacted] Thermal Survey/Mueller"

ch 01	67.7	deg_C
ch 02	60.7	deg_C
ch 03	76.1	deg_C
ch 04	71.7	deg_C
ch 05	74.5	deg_C
ch 06	70.7	deg_C
ch 07	76.3	deg_C
ch 08	77.5	deg_C
ch 09	83.5	deg_C
ch 10	78.7	deg_C
ch 11	23.1	deg_C
ch 12	22.8	deg_C
ch 13	22.2	deg_C
ch 14	24.3	deg_C
ch 15	24.0	deg_C
ch 16	85.8	deg_C
ch 17	89.5	deg_C
ch 18	73.8	deg_C
ch 19	74.9	deg_C

EXP 01--SCAN 256--11 27 16 25 01
[redacted] Thermal Survey/Mueller"

ch 01	67.8	deg_C
ch 02	60.8	deg_C
ch 03	76.4	deg_C
ch 04	72.0	deg_C
ch 05	74.8	deg_C
ch 06	71.0	deg_C
ch 07	78.7	deg_C
ch 08	77.9	deg_C
ch 09	83.9	deg_C
ch 10	80.0	deg_C
ch 11	23.4	deg_C
ch 12	23.0	deg_C
ch 13	22.4	deg_C
ch 14	24.5	deg_C
ch 15	24.0	deg_C
ch 16	85.8	deg_C
ch 17	89.8	deg_C
ch 18	74.1	deg_C
ch 19	75.2	deg_C

EXP 01--SCAN 268--11 27 16 37 01
[redacted] Thermal Survey/Mueller"

ch 01	67.6	deg_C
ch 02	60.7	deg_C
ch 03	76.0	deg_C
ch 04	71.7	deg_C
ch 05	74.4	deg_C
ch 06	70.7	deg_C
ch 07	76.2	deg_C
ch 08	77.5	deg_C
ch 09	83.4	deg_C
ch 10	78.7	deg_C
ch 11	23.3	deg_C
ch 12	22.8	deg_C
ch 13	22.1	deg_C
ch 14	24.3	deg_C
ch 15	23.7	deg_C
ch 16	85.5	deg_C
ch 17	89.5	deg_C
ch 18	73.7	deg_C
ch 19	74.8	deg_C

EXP 01--SCAN 272--11 27 16 41 01
[redacted] Thermal Survey/Mueller"

ch 01	67.6	deg_C
ch 02	60.7	deg_C
ch 03	76.8	deg_C
ch 04	71.6	deg_C
ch 05	74.3	deg_C
ch 06	70.6	deg_C
ch 07	76.2	deg_C
ch 08	77.4	deg_C
ch 09	83.4	deg_C
ch 10	78.6	deg_C
ch 11	23.3	deg_C
ch 12	22.7	deg_C
ch 13	22.1	deg_C
ch 14	24.2	deg_C
ch 15	23.8	deg_C
ch 16	85.4	deg_C
ch 17	89.4	deg_C
ch 18	73.8	deg_C
ch 19	74.8	deg_C

16:46 TEMP AT LEVEL 0 (+61°C CHAMBER; +70°C COMPONENT); RETURN VOLTAGES BACK TO LEVEL 0 STRESSES.

EXP 01--SCAN 276--11 27 16 45 01
[redacted] Thermal Survey/Mueller"

ch 01	67.5	deg_C
ch 02	60.7	deg_C
ch 03	76.8	deg_C
ch 04	71.5	deg_C
ch 05	74.3	deg_C
ch 06	70.6	deg_C
ch 07	76.1	deg_C
ch 08	77.3	deg_C
ch 09	83.3	deg_C
ch 10	78.5	deg_C
ch 11	23.2	deg_C
ch 12	22.7	deg_C
ch 13	22.1	deg_C
ch 14	24.1	deg_C
ch 15	23.5	deg_C
ch 16	85.4	deg_C
ch 17	89.4	deg_C
ch 18	73.8	deg_C
ch 19	74.7	deg_C

END DATA AVG.

EXP 01--SCAN 280--11 27 16 49
[redacted] Thermal Survey/Mueller"

ch 01	87.5	deg_C
ch 02	80.7	deg_C
ch 03	76.5	deg_C
ch 04	71.5	deg_C
ch 05	74.0	deg_C
ch 06	70.5	deg_C
ch 07	77.3	deg_C
ch 08	77.3	deg_C
ch 09	82.6	deg_C
ch 10	78.1	deg_C
ch 11	23.2	deg_C
ch 12	22.6	deg_C
ch 13	22.2	deg_C
ch 14	24.1	deg_C
ch 15	23.5	deg_C
ch 16	85.0	deg_C
ch 17	87.4	deg_C
ch 18	73.4	deg_C
ch 19	74.6	deg_C

EXP 01--SCAN 282--11 27 17 01 01
[redacted] Thermal Survey/Mueller"

ch 01	86.2	deg_C
ch 02	80.5	deg_C
ch 03	72.5	deg_C
ch 04	69.6	deg_C
ch 05	71.2	deg_C
ch 06	69.6	deg_C
ch 07	74.3	deg_C
ch 08	75.5	deg_C
ch 09	78.1	deg_C
ch 10	75.8	deg_C
ch 11	23.1	deg_C
ch 12	22.8	deg_C
ch 13	22.3	deg_C
ch 14	24.1	deg_C
ch 15	23.5	deg_C
ch 16	80.8	deg_C
ch 17	83.8	deg_C
ch 18	71.6	deg_C
ch 19	72.5	deg_C

EXP 01--SCAN 284--11 27 17 13 01
[redacted] Thermal Survey/Mueller"

ch 01	86.0	deg_C
ch 02	80.5	deg_C
ch 03	72.0	deg_C
ch 04	69.3	deg_C
ch 05	70.7	deg_C
ch 06	68.4	deg_C
ch 07	73.7	deg_C
ch 08	75.0	deg_C
ch 09	77.5	deg_C
ch 10	75.3	deg_C
ch 11	23.0	deg_C
ch 12	22.6	deg_C
ch 13	22.1	deg_C
ch 14	23.9	deg_C
ch 15	23.3	deg_C
ch 16	80.3	deg_C
ch 17	82.5	deg_C
ch 18	71.0	deg_C
ch 19	71.9	deg_C

EXP 01--SCAN 286--11 27 16 53
[redacted] Thermal Survey/Mueller"

ch 01	87.0	deg_C
ch 02	80.7	deg_C
ch 03	73.9	deg_C
ch 04	70.7	deg_C
ch 05	72.4	deg_C
ch 06	69.7	deg_C
ch 07	76.4	deg_C
ch 08	76.7	deg_C
ch 09	79.9	deg_C
ch 10	77.3	deg_C
ch 11	23.1	deg_C
ch 12	22.7	deg_C
ch 13	22.1	deg_C
ch 14	24.1	deg_C
ch 15	23.5	deg_C
ch 16	82.3	deg_C
ch 17	84.4	deg_C
ch 18	72.6	deg_C
ch 19	73.6	deg_C

EXP 01--SCAN 288--11 27 17 05 01
[redacted] Thermal Survey/Mueller"

ch 01	86.1	deg_C
ch 02	80.5	deg_C
ch 03	72.2	deg_C
ch 04	69.5	deg_C
ch 05	71.0	deg_C
ch 06	69.6	deg_C
ch 07	74.0	deg_C
ch 08	75.3	deg_C
ch 09	77.8	deg_C
ch 10	75.5	deg_C
ch 11	23.3	deg_C
ch 12	22.7	deg_C
ch 13	22.1	deg_C
ch 14	24.0	deg_C
ch 15	23.5	deg_C
ch 16	80.5	deg_C
ch 17	82.7	deg_C
ch 18	71.2	deg_C
ch 19	72.2	deg_C

START DATA AVG.

EXP 01--SCAN 300--11 27 17 17 01
[redacted] Thermal Survey/Mueller"

ch 01	85.9	deg_C
ch 02	80.6	deg_C
ch 03	71.9	deg_C
ch 04	69.3	deg_C
ch 05	70.7	deg_C
ch 06	68.3	deg_C
ch 07	73.6	deg_C
ch 08	74.9	deg_C
ch 09	77.4	deg_C
ch 10	75.2	deg_C
ch 11	23.2	deg_C
ch 12	22.7	deg_C
ch 13	22.1	deg_C
ch 14	23.9	deg_C
ch 15	23.5	deg_C
ch 16	80.3	deg_C
ch 17	82.5	deg_C
ch 18	71.0	deg_C
ch 19	71.9	deg_C

EXP 01--SCAN 290--11 27 16 57
[redacted] Thermal Survey/Mueller"

ch 01	86.5	deg_C
ch 02	80.6	deg_C
ch 03	72.9	deg_C
ch 04	70.1	deg_C
ch 05	71.6	deg_C
ch 06	69.1	deg_C
ch 07	74.7	deg_C
ch 08	76.0	deg_C
ch 09	78.7	deg_C
ch 10	76.3	deg_C
ch 11	23.0	deg_C
ch 12	22.7	deg_C
ch 13	22.2	deg_C
ch 14	24.1	deg_C
ch 15	23.5	deg_C
ch 16	81.3	deg_C
ch 17	83.5	deg_C
ch 18	72.6	deg_C
ch 19	72.9	deg_C

EXP 01--SCAN 302--11 27 17 09 01
[redacted] Thermal Survey/Mueller"

ch 01	86.2	deg_C
ch 02	80.6	deg_C
ch 03	72.1	deg_C
ch 04	69.4	deg_C
ch 05	70.8	deg_C
ch 06	68.4	deg_C
ch 07	73.8	deg_C
ch 08	75.1	deg_C
ch 09	77.5	deg_C
ch 10	75.4	deg_C
ch 11	23.1	deg_C
ch 12	22.8	deg_C
ch 13	22.3	deg_C
ch 14	24.0	deg_C
ch 15	23.4	deg_C
ch 16	80.5	deg_C
ch 17	82.6	deg_C
ch 18	71.2	deg_C
ch 19	72.0	deg_C

EXP 01--SCAN 312--11 27 17 21 01
[redacted] Thermal Survey/Mueller"

ch 01	86.3	deg_C
ch 02	80.6	deg_C
ch 03	71.9	deg_C
ch 04	69.2	deg_C
ch 05	70.7	deg_C
ch 06	68.3	deg_C
ch 07	73.6	deg_C
ch 08	74.9	deg_C
ch 09	77.4	deg_C
ch 10	75.2	deg_C
ch 11	23.0	deg_C
ch 12	22.9	deg_C
ch 13	22.2	deg_C
ch 14	23.9	deg_C
ch 15	23.7	deg_C
ch 16	80.2	deg_C
ch 17	82.4	deg_C
ch 18	70.9	deg_C
ch 19	71.8	deg_C

EXP 01--SCAN 315--11 27 17 25 01
[redacted] Thermal Survey/Mueller"

ch	01	65.6	deg_C
ch	02	60.5	deg_C
ch	03	71.6	deg_C
ch	04	69.1	deg_C
ch	05	70.6	deg_C
ch	06	66.3	deg_C
ch	07	73.8	deg_C
ch	08	74.9	deg_C
ch	09	77.4	deg_C
ch	10	75.2	deg_C
ch	11	23.0	deg_C
ch	12	22.6	deg_C
ch	13	22.1	deg_C
ch	14	23.8	deg_C
ch	15	23.3	deg_C
ch	16	60.3	deg_C
ch	17	82.4	deg_C
ch	18	70.8	deg_C
ch	19	71.7	deg_C

EXP 01--SCAN 328--11 27 17 27 01
[redacted] Thermal Survey/Mueller"

ch	01	65.6	deg_C
ch	02	60.5	deg_C
ch	03	71.6	deg_C
ch	04	69.1	deg_C
ch	05	70.6	deg_C
ch	06	66.3	deg_C
ch	07	74.2	deg_C
ch	08	74.9	deg_C
ch	09	77.4	deg_C
ch	10	75.2	deg_C
ch	11	23.0	deg_C
ch	12	22.7	deg_C
ch	13	22.2	deg_C
ch	14	23.7	deg_C
ch	15	23.5	deg_C
ch	16	60.2	deg_C
ch	17	82.4	deg_C
ch	18	70.8	deg_C
ch	19	71.7	deg_C

END DATA AVG.

EOT

EXP 01--SCAN 328--11 27 17 29 01
[redacted] Thermal Survey/Mueller"

ch	01	65.6	deg_C
ch	02	60.5	deg_C
ch	03	71.6	deg_C
ch	04	69.1	deg_C
ch	05	70.6	deg_C
ch	06	66.3	deg_C
ch	07	73.8	deg_C
ch	08	74.9	deg_C
ch	09	77.4	deg_C
ch	10	75.2	deg_C
ch	11	23.0	deg_C
ch	12	22.9	deg_C
ch	13	23.0	deg_C
ch	14	23.6	deg_C
ch	15	23.8	deg_C
ch	16	60.2	deg_C
ch	17	82.4	deg_C
ch	18	70.8	deg_C
ch	19	71.7	deg_C

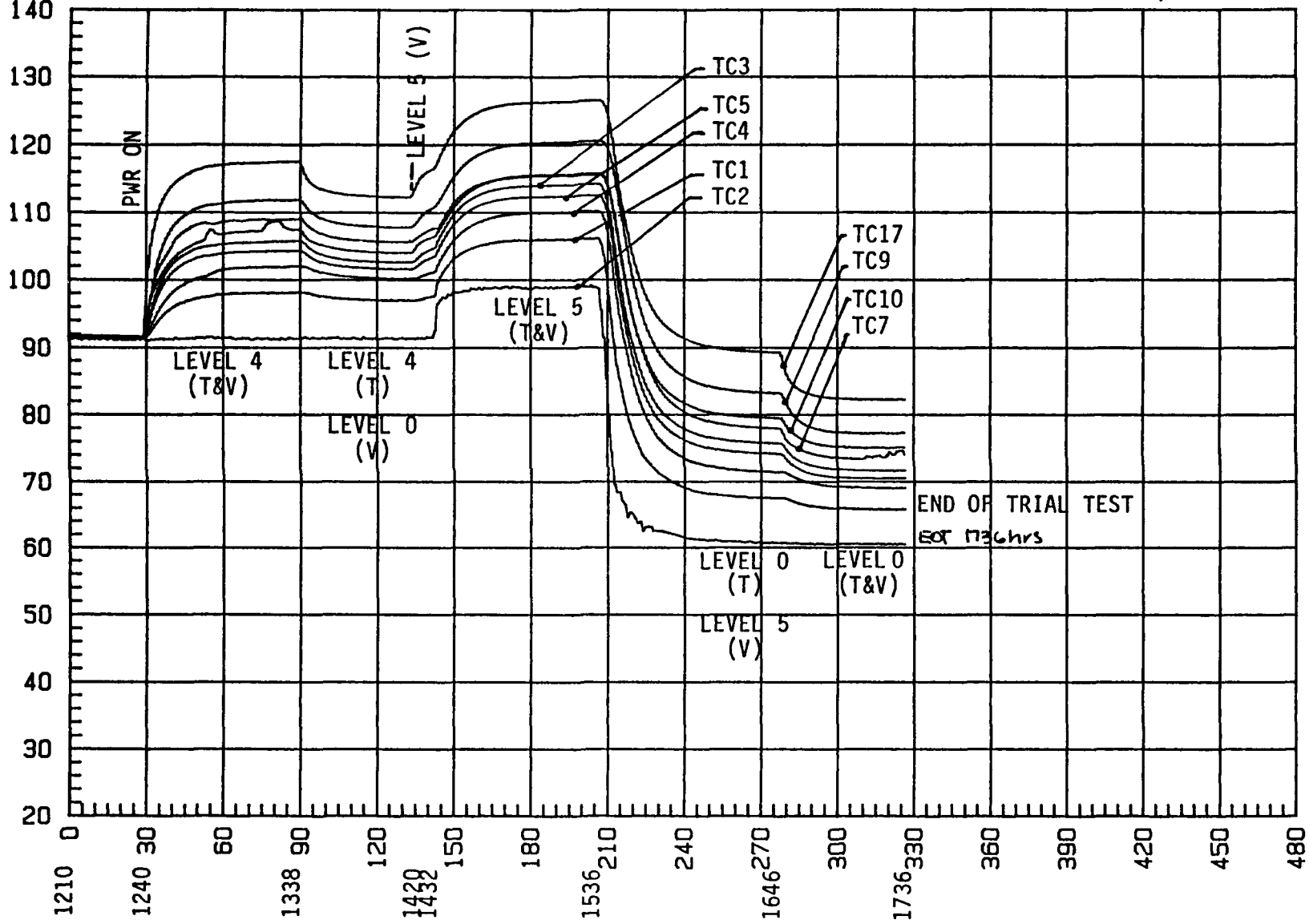
END OF TRIAL TEST & TEST DATA FOR DAY 3

DAY 3

EXP 01--SCAN 324--11 27 17 33 01
[redacted] Thermal Survey/Mueller"

ch	01	65.6	deg_C
ch	02	60.5	deg_C
ch	03	71.6	deg_C
ch	04	69.1	deg_C
ch	05	70.7	deg_C
ch	06	66.3	deg_C
ch	07	74.3	deg_C
ch	08	74.9	deg_C
ch	09	77.4	deg_C
ch	10	75.2	deg_C
ch	11	23.2	deg_C
ch	12	22.9	deg_C
ch	13	22.4	deg_C
ch	14	23.9	deg_C
ch	15	23.7	deg_C
ch	16	60.2	deg_C
ch	17	82.4	deg_C
ch	18	70.8	deg_C
ch	19	71.7	deg_C

FIGURE D-4: DAY 3 [redacted] TEMPERATURE TRANSITION SURVEY MSN: -100/ 349



DATE: 11-27-91

GSE 92466 TEST

TRIAL TEST RUN

D-11

220

DAY 4 DAY 4: 12/17/91 STEP-STRESS TRIAL
13:34 START PLOT; UUT PWR ON SINCE 12:00 (BEGIN DWELL 13:34); LEVEL 4 TEMP/LEVEL 0 VOLTAGE

EXP 01--SCAN 004--12 17 13 30 51
[redacted] Thermal Survey DAY 4"
BEGIN DATA AVG.

ch 01	96.0	deg_C
ch 02	91.0	deg_C
ch 03	101.7	deg_C
ch 04	99.9	deg_C
ch 05	101.3	deg_C
ch 06	99.1	deg_C
ch 07	103.9	deg_C
ch 08	105.3	deg_C
ch 09	107.8	deg_C
ch 10	105.4	deg_C
ch 16	109.9	deg_C
ch 17	112.3	deg_C
ch 18	101.6	deg_C
ch 19	102.5	deg_C

EXP 01--SCAN 008--12 17 13 42 51
[redacted] Thermal Survey DAY 4"

ch 01	96.1	deg_C
ch 02	91.3	deg_C
ch 03	101.8	deg_C
ch 04	100.0	deg_C
ch 05	101.3	deg_C
ch 06	99.0	deg_C
ch 07	104.1	deg_C
ch 08	105.6	deg_C
ch 09	107.9	deg_C
ch 10	105.5	deg_C
ch 16	109.9	deg_C
ch 17	112.3	deg_C
ch 18	101.6	deg_C
ch 19	102.6	deg_C

EXP 01--SCAN 012--12 17 13 46 51
[redacted] Thermal Survey DAY 4"

ch 01	96.3	deg_C
ch 02	91.0	deg_C
ch 03	101.8	deg_C
ch 04	99.9	deg_C
ch 05	101.3	deg_C
ch 06	99.0	deg_C
ch 07	104.2	deg_C
ch 08	105.7	deg_C
ch 09	108.0	deg_C
ch 10	105.5	deg_C
ch 16	109.9	deg_C
ch 17	112.3	deg_C
ch 18	101.6	deg_C
ch 19	102.5	deg_C

EXP 01--SCAN 016--12 17 13
[redacted] Thermal Survey DAY 4"

ch 01	96.3	deg_C
ch 02	90.9	deg_C
ch 03	101.7	deg_C
ch 04	99.9	deg_C
ch 05	101.3	deg_C
ch 06	99.1	deg_C
ch 07	104.2	deg_C
ch 08	105.7	deg_C
ch 09	108.0	deg_C
ch 10	105.5	deg_C
ch 16	109.8	deg_C
ch 17	112.3	deg_C
ch 18	101.6	deg_C
ch 19	102.5	deg_C

EXP 01--SCAN 020--12 17 13
[redacted] Thermal Survey DAY 4"

ch 01	96.2	deg_C
ch 02	91.3	deg_C
ch 03	101.8	deg_C
ch 04	100.1	deg_C
ch 05	101.3	deg_C
ch 06	99.0	deg_C
ch 07	103.7	deg_C
ch 08	105.3	deg_C
ch 09	107.8	deg_C
ch 10	105.4	deg_C
ch 16	109.8	deg_C
ch 17	112.3	deg_C
ch 18	101.6	deg_C
ch 19	102.6	deg_C

EXP 01--SCAN 024--12 17 13
[redacted] Thermal Survey DAY 4"

ch 01	96.2	deg_C
ch 02	91.1	deg_C
ch 03	101.7	deg_C
ch 04	100.0	deg_C
ch 05	101.3	deg_C
ch 06	99.0	deg_C
ch 07	103.8	deg_C
ch 08	105.3	deg_C
ch 09	107.9	deg_C
ch 10	105.4	deg_C
ch 16	109.8	deg_C
ch 17	112.3	deg_C
ch 18	101.6	deg_C
ch 19	102.6	deg_C

EXP 01--SCAN 028--12 17 14 02 51
[redacted] Thermal Survey DAY 4"

ch 01	96.2	deg_C
ch 02	91.4	deg_C
ch 03	101.8	deg_C
ch 04	100.0	deg_C
ch 05	101.3	deg_C
ch 06	99.1	deg_C
ch 07	103.7	deg_C
ch 08	105.2	deg_C
ch 09	107.8	deg_C
ch 10	105.4	deg_C
ch 16	109.8	deg_C
ch 17	112.3	deg_C
ch 18	101.6	deg_C
ch 19	102.5	deg_C

EXP 01--SCAN 032--12 17 14 06 51
[redacted] Thermal Survey DAY 4"

ch 01	96.1	deg_C
ch 02	91.3	deg_C
ch 03	101.8	deg_C
ch 04	100.1	deg_C
ch 05	101.3	deg_C
ch 06	99.0	deg_C
ch 07	103.9	deg_C
ch 08	105.4	deg_C
ch 09	107.9	deg_C
ch 10	105.4	deg_C
ch 16	109.8	deg_C
ch 17	112.3	deg_C
ch 18	101.6	deg_C
ch 19	102.6	deg_C

EXP 01--SCAN 036--12 17 14 10 51
[redacted] Thermal Survey DAY 4"

ch 01	96.2	deg_C
ch 02	91.2	deg_C
ch 03	101.8	deg_C
ch 04	100.0	deg_C
ch 05	101.4	deg_C
ch 06	99.1	deg_C
ch 07	103.8	deg_C
ch 08	105.3	deg_C
ch 09	107.9	deg_C
ch 10	105.3	deg_C
ch 16	109.8	deg_C
ch 17	112.3	deg_C
ch 18	101.6	deg_C
ch 19	102.6	deg_C

BEGIN RAMP TO LEVEL 5 TEMP/LEVE VOLTAGE

EXP 01--SCAN 040--12 17 14 14 51
[redacted] Thermal Survey DAY 4"

ch 01	95.1	deg_C
ch 02	91.0	deg_C
ch 03	101.8	deg_C
ch 04	99.9	deg_C
ch 05	101.3	deg_C
ch 06	99.1	deg_C
ch 07	103.8	deg_C
ch 08	105.3	deg_C
ch 09	107.9	deg_C
ch 10	105.3	deg_C
ch 16	109.8	deg_C
ch 17	112.3	deg_C
ch 18	101.6	deg_C
ch 19	102.6	deg_C

EXP 01--SCAN 044--12 17 14 18 51
[redacted] Thermal Survey DAY 4"

ch 01	96.0	deg_C
ch 02	91.2	deg_C
ch 03	101.8	deg_C
ch 04	100.0	deg_C
ch 05	101.3	deg_C
ch 06	99.0	deg_C
ch 07	104.3	deg_C
ch 08	105.6	deg_C
ch 09	108.0	deg_C
ch 10	105.5	deg_C
ch 16	109.8	deg_C
ch 17	112.3	deg_C
ch 18	101.5	deg_C
ch 19	102.5	deg_C

EXP 01--SCAN 048--12 17 14 22 51
[redacted] Thermal Survey DAY 4"

ch 01	96.1	deg_C
ch 02	91.4	deg_C
ch 03	101.8	deg_C
ch 04	100.1	deg_C
ch 05	101.4	deg_C
ch 06	99.1	deg_C
ch 07	104.0	deg_C
ch 08	105.4	deg_C
ch 09	107.9	deg_C
ch 10	105.4	deg_C
ch 16	109.8	deg_C
ch 17	112.3	deg_C
ch 18	101.5	deg_C
ch 19	102.5	deg_C

EXP 01--SCAN 052--12 17 14 26 51
[redacted] Thermal Survey DAY 4"

ch 01	96.0	deg_C
ch 02	91.4	deg_C
ch 03	101.8	deg_C
ch 04	100.1	deg_C
ch 05	101.3	deg_C
ch 06	99.1	deg_C
ch 07	103.8	deg_C
ch 08	105.3	deg_C
ch 09	107.9	deg_C
ch 10	105.4	deg_C
ch 16	109.8	deg_C
ch 17	112.3	deg_C
ch 18	101.5	deg_C
ch 19	102.5	deg_C

EXP 01--SCAN 056--12 17 14 30 51
[redacted] Thermal Survey DAY 4"

ch 01	96.0	deg_C
ch 02	91.4	deg_C
ch 03	101.8	deg_C
ch 04	99.9	deg_C
ch 05	101.3	deg_C
ch 06	99.0	deg_C
ch 07	104.1	deg_C
ch 08	105.5	deg_C
ch 09	107.9	deg_C
ch 10	105.4	deg_C
ch 16	109.8	deg_C
ch 17	112.3	deg_C
ch 18	101.5	deg_C
ch 19	102.5	deg_C

EXP 01--SCAN 060--12 17 14 34 51
[redacted] Thermal Survey DAY 4"

ch 01	95.0	deg_C
ch 02	90.7	deg_C
ch 03	101.7	deg_C
ch 04	99.8	deg_C
ch 05	101.3	deg_C
ch 06	98.0	deg_C
ch 07	104.2	deg_C
ch 08	105.5	deg_C
ch 09	107.9	deg_C
ch 10	105.5	deg_C
ch 16	109.8	deg_C
ch 17	112.3	deg_C
ch 18	101.5	deg_C
ch 19	102.5	deg_C

END DATA AVG. LEVEL 4/0

EXP 01--SCAN 064--12 17 14 38 51
[redacted] Thermal Survey DAY 4"

ch 01	98.4	deg_C
ch 02	97.4	deg_C
ch 03	103.7	deg_C
ch 04	101.8	deg_C
ch 05	102.9	deg_C
ch 06	101.2	deg_C
ch 07	105.0	deg_C
ch 08	106.4	deg_C
ch 09	108.6	deg_C
ch 10	106.4	deg_C
ch 16	111.2	deg_C
ch 17	113.6	deg_C
ch 18	102.9	deg_C
ch 19	103.5	deg_C

EXP 01--SCAN 068--12 17 14 42 51
[redacted] Thermal Survey DAY 4"

ch 01	99.1	deg_C
ch 02	97.4	deg_C
ch 03	105.5	deg_C
ch 04	103.6	deg_C
ch 05	104.8	deg_C
ch 06	103.0	deg_C
ch 07	107.2	deg_C
ch 08	108.5	deg_C
ch 09	110.5	deg_C
ch 10	108.6	deg_C
ch 16	113.1	deg_C
ch 17	115.6	deg_C
ch 18	104.8	deg_C
ch 19	105.6	deg_C

EXP 01--SCAN 072--12 17 14 46 51
[redacted] Thermal Survey DAY 4"

ch 01	100.5	deg_C
ch 02	97.7	deg_C
ch 03	106.8	deg_C
ch 04	104.9	deg_C
ch 05	106.2	deg_C
ch 06	104.2	deg_C
ch 07	108.4	deg_C
ch 08	109.8	deg_C
ch 09	112.1	deg_C
ch 10	110.0	deg_C
ch 16	114.6	deg_C
ch 17	117.0	deg_C
ch 18	106.2	deg_C
ch 19	107.1	deg_C

EXP 01--SCAN 076--12 17 14 50
[redacted] Thermal Survey DAY 4"

ch 01	101.7	deg_C
ch 02	98.8	deg_C
ch 03	107.8	deg_C
ch 04	105.9	deg_C
ch 05	107.1	deg_C
ch 06	105.1	deg_C
ch 07	108.4	deg_C
ch 08	110.9	deg_C
ch 09	113.2	deg_C
ch 10	111.1	deg_C
ch 16	115.5	deg_C
ch 17	118.0	deg_C
ch 18	107.2	deg_C
ch 19	108.2	deg_C

EXP 01--SCAN 080--12 17 14 54
[redacted] Thermal Survey DAY 4"

ch 01	102.1	deg_C
ch 02	98.9	deg_C
ch 03	108.4	deg_C
ch 04	106.4	deg_C
ch 05	107.7	deg_C
ch 06	105.5	deg_C
ch 07	110.5	deg_C
ch 08	111.8	deg_C
ch 09	114.0	deg_C
ch 10	111.8	deg_C
ch 16	116.2	deg_C
ch 17	118.5	deg_C
ch 18	107.8	deg_C
ch 19	108.8	deg_C

EXP 01--SCAN 084--12 17 14 58
[redacted] Thermal Survey DAY 4"

ch 01	102.4	deg_C
ch 02	98.3	deg_C
ch 03	108.7	deg_C
ch 04	106.9	deg_C
ch 05	108.1	deg_C
ch 06	105.9	deg_C
ch 07	110.3	deg_C
ch 08	111.9	deg_C
ch 09	114.4	deg_C
ch 10	112.1	deg_C
ch 16	116.6	deg_C
ch 17	119.0	deg_C
ch 18	108.3	deg_C
ch 19	109.3	deg_C

EXP 01--SCAN 088-- 17 15 02 51
[redacted] Thermal Survey, DAY 4"

ch 01	102.5	deg_C
ch 02	98.3	deg_C
ch 03	108.0	deg_C
ch 04	107.0	deg_C
ch 05	108.4	deg_C
ch 06	106.1	deg_C
ch 07	111.3	deg_C
ch 08	112.5	deg_C
ch 09	114.8	deg_C
ch 10	112.5	deg_C
ch 16	116.8	deg_C
ch 17	119.2	deg_C
ch 18	108.5	deg_C
ch 19	108.6	deg_C

15:04 BEGIN DWELL

BEGIN DATA AVG.

EXP 01--SCAN 092--12 17 15 06 51
[redacted] Thermal Survey DAY 4"

ch 01	102.7	deg_C
ch 02	98.1	deg_C
ch 03	108.1	deg_C
ch 04	107.1	deg_C
ch 05	108.5	deg_C
ch 06	106.3	deg_C
ch 07	111.5	deg_C
ch 08	112.7	deg_C
ch 09	115.0	deg_C
ch 10	112.7	deg_C
ch 16	117.0	deg_C
ch 17	119.4	deg_C
ch 18	108.6	deg_C
ch 19	108.8	deg_C

EXP 01--SCAN 096--12 17 15 10 51
[redacted] Thermal Survey DAY 4"

ch 01	102.7	deg_C
ch 02	98.8	deg_C
ch 03	108.3	deg_C
ch 04	107.4	deg_C
ch 05	108.7	deg_C
ch 06	106.5	deg_C
ch 07	111.6	deg_C
ch 08	112.8	deg_C
ch 09	115.1	deg_C
ch 10	112.8	deg_C
ch 16	117.1	deg_C
ch 17	119.5	deg_C
ch 18	108.9	deg_C
ch 19	108.9	deg_C

EXP 01--SCAN 100--12 17 15 14 51
[redacted] Thermal Survey DAY 4"

ch 01	102.7	deg_C
ch 02	99.0	deg_C
ch 03	109.3	deg_C
ch 04	107.5	deg_C
ch 05	108.7	deg_C
ch 06	106.5	deg_C
ch 07	111.2	deg_C
ch 08	112.7	deg_C
ch 09	115.2	deg_C
ch 10	112.8	deg_C
ch 16	117.1	deg_C
ch 17	119.6	deg_C
ch 18	108.0	deg_C
ch 19	110.0	deg_C

EXP 01--SCAN 104--12 17 15 18 51
[redacted] Thermal Survey DAY 4"

ch 01	102.8	deg_C
ch 02	99.1	deg_C
ch 03	109.4	deg_C
ch 04	107.5	deg_C
ch 05	108.8	deg_C
ch 06	106.5	deg_C
ch 07	111.8	deg_C
ch 08	113.0	deg_C
ch 09	115.3	deg_C
ch 10	112.9	deg_C
ch 16	117.2	deg_C
ch 17	119.6	deg_C
ch 18	109.0	deg_C
ch 19	110.0	deg_C

EXP 01--SCAN 108--12 17 15 22 51
[redacted] Thermal Survey DAY 4"

ch 01	102.7	deg_C
ch 02	98.1	deg_C
ch 03	109.4	deg_C
ch 04	107.5	deg_C
ch 05	108.8	deg_C
ch 06	106.6	deg_C
ch 07	111.2	deg_C
ch 08	112.7	deg_C
ch 09	115.2	deg_C
ch 10	112.9	deg_C
ch 16	117.2	deg_C
ch 17	119.7	deg_C
ch 18	109.0	deg_C
ch 19	110.1	deg_C

EXP 01--SCAN 112--12 17 15 26 51
[redacted] Thermal Survey DAY 4"

ch	01	102.8 deg_C
ch	02	98.7 deg_C
ch	03	109.4 deg_C
ch	04	107.5 deg_C
ch	05	108.8 deg_C
ch	06	106.6 deg_C
ch	07	111.2 deg_C
ch	08	112.7 deg_C
ch	09	115.3 deg_C
ch	10	112.9 deg_C
ch	16	117.2 deg_C
ch	17	119.7 deg_C
ch	18	109.1 deg_C
ch	19	110.1 deg_C

EXP 01--SCAN 116--12 17 15 30 51
[redacted] Thermal Survey DAY 4"

ch	01	102.9 deg_C
ch	02	98.4 deg_C
ch	03	109.4 deg_C
ch	04	107.5 deg_C
ch	05	108.9 deg_C
ch	06	106.6 deg_C
ch	07	111.9 deg_C
ch	08	113.0 deg_C
ch	09	115.4 deg_C
ch	10	113.0 deg_C
ch	16	117.3 deg_C
ch	17	119.7 deg_C
ch	18	109.1 deg_C
ch	19	110.1 deg_C

EXP 01--SCAN 120--12 17 15 34 51
[redacted] Thermal Survey DAY 4"

ch	01	102.9 deg_C
ch	02	98.7 deg_C
ch	03	109.4 deg_C
ch	04	107.5 deg_C
ch	05	108.9 deg_C
ch	06	106.5 deg_C
ch	07	111.9 deg_C
ch	08	113.1 deg_C
ch	09	115.4 deg_C
ch	10	113.0 deg_C
ch	16	117.3 deg_C
ch	17	119.7 deg_C
ch	18	109.1 deg_C
ch	19	110.1 deg_C

EXP 01--SCAN 124--1[redacted] 15 38 51
[redacted] Thermal Survey DAY 4"

ch	01	102.9 deg_C
ch	02	98.6 deg_C
ch	03	109.4 deg_C
ch	04	107.5 deg_C
ch	05	108.9 deg_C
ch	06	106.6 deg_C
ch	07	111.9 deg_C
ch	08	113.0 deg_C
ch	09	115.4 deg_C
ch	10	113.0 deg_C
ch	16	117.3 deg_C
ch	17	119.7 deg_C
ch	18	109.1 deg_C
ch	19	110.1 deg_C

EXP 01--SCAN 128--12 17 15 42 51
[redacted] Thermal Survey DAY 4"

ch	01	103.0 deg_C
ch	02	98.6 deg_C
ch	03	109.4 deg_C
ch	04	107.5 deg_C
ch	05	108.9 deg_C
ch	06	106.6 deg_C
ch	07	111.9 deg_C
ch	08	113.0 deg_C
ch	09	115.4 deg_C
ch	10	113.0 deg_C
ch	16	117.3 deg_C
ch	17	119.7 deg_C
ch	18	109.1 deg_C
ch	19	110.2 deg_C

EXP 01--SCAN 132--12 17 15 46 51
[redacted] Thermal Survey DAY 4"

ch	01	103.1 deg_C
ch	02	98.1 deg_C
ch	03	109.4 deg_C
ch	04	107.5 deg_C
ch	05	108.9 deg_C
ch	06	106.6 deg_C
ch	07	111.5 deg_C
ch	08	112.9 deg_C
ch	09	115.4 deg_C
ch	10	113.0 deg_C
ch	16	117.3 deg_C
ch	17	119.7 deg_C
ch	18	109.1 deg_C
ch	19	110.1 deg_C

EXP 01--SCAN 136--12 17 15 50 51
[redacted] Thermal Survey DAY 4"

ch	01	103.1 deg_C
ch	02	98.3 deg_C
ch	03	109.4 deg_C
ch	04	107.5 deg_C
ch	05	108.9 deg_C
ch	06	106.7 deg_C
ch	07	111.9 deg_C
ch	08	113.0 deg_C
ch	09	115.4 deg_C
ch	10	113.0 deg_C
ch	16	117.3 deg_C
ch	17	119.7 deg_C
ch	18	109.1 deg_C
ch	19	110.1 deg_C

EXP 01--SCAN 140--12 17 15 54 51
[redacted] Thermal Survey DAY 4"

ch	01	103.1 deg_C
ch	02	98.4 deg_C
ch	03	109.4 deg_C
ch	04	107.5 deg_C
ch	05	108.8 deg_C
ch	06	106.7 deg_C
ch	07	111.9 deg_C
ch	08	113.0 deg_C
ch	09	115.4 deg_C
ch	10	113.0 deg_C
ch	16	117.3 deg_C
ch	17	119.7 deg_C
ch	18	109.1 deg_C
ch	19	110.1 deg_C

EXP 01--SCAN 144--12 17 15 58 51
[redacted] Thermal Survey DAY 4"

ch	01	103.2 deg_C
ch	02	98.2 deg_C
ch	03	109.4 deg_C
ch	04	107.6 deg_C
ch	05	108.9 deg_C
ch	06	106.6 deg_C
ch	07	111.3 deg_C
ch	08	112.8 deg_C
ch	09	115.4 deg_C
ch	10	113.0 deg_C
ch	16	117.3 deg_C
ch	17	119.8 deg_C
ch	18	109.2 deg_C
ch	19	110.2 deg_C

TRIAL TEST RUN

081

DAY 4: PAGE 4 OF 14

EXP 01--SCAN 148--12 17 16 02 51
[redacted] Thermal Survey DAY 4"

ch 01	103.2	deg_C
ch 02	98.9	deg_C
ch 03	109.5	deg_C
ch 04	107.7	deg_C
ch 05	108.8	deg_C
ch 06	106.7	deg_C
ch 07	111.3	deg_C
ch 08	112.8	deg_C
ch 09	115.4	deg_C
ch 10	113.0	deg_C
ch 16	117.3	deg_C
ch 17	119.8	deg_C
ch 18	109.2	deg_C
ch 19	110.2	deg_C

EXP 01--SCAN 160--[illegible]7 16 14 51
[redacted] Thermal Survey DAY 4"

ch 01	103.2	deg_C
ch 02	99.1	deg_C
ch 03	109.5	deg_C
ch 04	107.6	deg_C
ch 05	108.8	deg_C
ch 06	106.7	deg_C
ch 07	111.6	deg_C
ch 08	112.9	deg_C
ch 09	115.4	deg_C
ch 10	113.0	deg_C
ch 16	117.4	deg_C
ch 17	119.8	deg_C
ch 18	109.2	deg_C
ch 19	110.2	deg_C

EXP 01--SCAN 172--12 17 16 26 51
[redacted] Thermal Survey DAY 4"

ch 01	107.1	deg_C
ch 02	106.2	deg_C
ch 03	114.6	deg_C
ch 04	112.7	deg_C
ch 05	113.8	deg_C
ch 06	111.8	deg_C
ch 07	116.1	deg_C
ch 08	117.4	deg_C
ch 09	119.7	deg_C
ch 10	117.7	deg_C
ch 16	122.2	deg_C
ch 17	124.7	deg_C
ch 18	114.0	deg_C
ch 19	114.9	deg_C

END DATA AVG. LEVEL 5/0

RAMP TO LEVEL 6 TEMP/0 VOLTAGE

EXP 01--SCAN 152--12 17 16 06 51
[redacted] Thermal Survey DAY 4"

ch 01	103.2	deg_C
ch 02	98.9	deg_C
ch 03	109.5	deg_C
ch 04	107.6	deg_C
ch 05	108.9	deg_C
ch 06	106.7	deg_C
ch 07	111.3	deg_C
ch 08	112.8	deg_C
ch 09	115.4	deg_C
ch 10	113.0	deg_C
ch 16	117.3	deg_C
ch 17	119.8	deg_C
ch 18	109.2	deg_C
ch 19	110.2	deg_C

EXP 01--SCAN 164--12 17 16 18 51
[redacted] Thermal Survey DAY 4"

ch 01	103.9	deg_C
ch 02	105.4	deg_C
ch 03	111.5	deg_C
ch 04	109.7	deg_C
ch 05	110.5	deg_C
ch 06	109.0	deg_C
ch 07	112.5	deg_C
ch 08	114.0	deg_C
ch 09	116.3	deg_C
ch 10	114.3	deg_C
ch 16	118.9	deg_C
ch 17	121.3	deg_C
ch 18	110.8	deg_C
ch 19	111.5	deg_C

EXP 01--SCAN 176--12 17 16 30 51
[redacted] Thermal Survey DAY 4"

ch 01	108.0	deg_C
ch 02	105.1	deg_C
ch 03	115.5	deg_C
ch 04	113.5	deg_C
ch 05	114.7	deg_C
ch 06	112.6	deg_C
ch 07	116.9	deg_C
ch 08	118.4	deg_C
ch 09	120.6	deg_C
ch 10	118.7	deg_C
ch 16	123.0	deg_C
ch 17	125.5	deg_C
ch 18	114.9	deg_C
ch 19	115.9	deg_C

EXP 01--SCAN 156--12 17 16 10 51
[redacted] Thermal Survey DAY 4"

ch 01	103.1	deg_C
ch 02	98.1	deg_C
ch 03	109.5	deg_C
ch 04	107.6	deg_C
ch 05	108.9	deg_C
ch 06	106.7	deg_C
ch 07	111.4	deg_C
ch 08	112.8	deg_C
ch 09	115.4	deg_C
ch 10	113.0	deg_C
ch 16	117.3	deg_C
ch 17	119.8	deg_C
ch 18	109.2	deg_C
ch 19	110.2	deg_C

EXP 01--SCAN 168--12 17 16 22 51
[redacted] Thermal Survey DAY 4"

ch 01	105.4	deg_C
ch 02	104.8	deg_C
ch 03	113.3	deg_C
ch 04	111.4	deg_C
ch 05	112.5	deg_C
ch 06	110.7	deg_C
ch 07	114.5	deg_C
ch 08	116.0	deg_C
ch 09	118.2	deg_C
ch 10	116.3	deg_C
ch 16	120.8	deg_C
ch 17	123.3	deg_C
ch 18	112.7	deg_C
ch 19	113.5	deg_C

EXP 01--SCAN 180--12 17 16 34 51
[redacted] Thermal Survey DAY 4"

ch 01	108.5	deg_C
ch 02	106.5	deg_C
ch 03	116.0	deg_C
ch 04	114.1	deg_C
ch 05	115.2	deg_C
ch 06	113.2	deg_C
ch 07	117.2	deg_C
ch 08	119.1	deg_C
ch 09	120.7	deg_C
ch 10	119.3	deg_C
ch 16	123.5	deg_C
ch 17	126.1	deg_C
ch 18	115.5	deg_C
ch 19	116.5	deg_C

EXP 01--SCAN 184--12 17 16 38
[redacted] Thermal Survey DAY 4"

ch 01	108.6	deg_C
ch 02	105.5	deg_C
ch 03	116.4	deg_C
ch 04	114.5	deg_C
ch 05	115.7	deg_C
ch 06	113.5	deg_C
ch 07	118.1	deg_C
ch 08	119.6	deg_C
ch 09	121.3	deg_C
ch 10	119.7	deg_C
ch 15	124.0	deg_C
ch 17	126.5	deg_C
ch 18	116.0	deg_C
ch 19	117.0	deg_C

EXP 01--SCAN 188--12 17 16 42
[redacted] Thermal Survey DAY 4"

ch 01	108.6	deg_C
ch 02	105.6	deg_C
ch 03	116.7	deg_C
ch 04	114.7	deg_C
ch 05	116.0	deg_C
ch 06	113.8	deg_C
ch 07	118.6	deg_C
ch 08	119.9	deg_C
ch 09	122.0	deg_C
ch 10	120.0	deg_C
ch 15	124.3	deg_C
ch 17	126.8	deg_C
ch 18	116.3	deg_C
ch 19	117.3	deg_C

16:44BEGIN DWELL AT 6/0

BEGIN DATA AVG.

EXP 01--SCAN 192--12 17 16 45
[redacted] Thermal Survey DAY 4"

ch 01	108.9	deg_C
ch 02	106.3	deg_C
ch 03	116.8	deg_C
ch 04	114.9	deg_C
ch 05	116.1	deg_C
ch 06	113.9	deg_C
ch 07	118.1	deg_C
ch 08	120.1	deg_C
ch 09	123.1	deg_C
ch 10	120.3	deg_C
ch 16	124.5	deg_C
ch 17	126.9	deg_C
ch 18	116.5	deg_C
ch 19	117.5	deg_C

EXP 01--SCAN 196--12 17 16 50 51
[redacted] Thermal Survey DAY 4"

ch 01	108.8	deg_C
ch 02	105.8	deg_C
ch 03	116.9	deg_C
ch 04	115.0	deg_C
ch 05	116.2	deg_C
ch 06	114.0	deg_C
ch 07	118.4	deg_C
ch 08	120.2	deg_C
ch 09	121.9	deg_C
ch 10	120.3	deg_C
ch 16	124.6	deg_C
ch 17	127.1	deg_C
ch 18	116.6	deg_C
ch 19	117.6	deg_C

EXP 01--SCAN 200--12 17 16 54 51
[redacted] Thermal Survey DAY 4"

ch 01	108.9	deg_C
ch 02	105.5	deg_C
ch 03	117.0	deg_C
ch 04	115.1	deg_C
ch 05	116.3	deg_C
ch 06	114.0	deg_C
ch 07	119.2	deg_C
ch 08	120.3	deg_C
ch 09	123.0	deg_C
ch 10	120.4	deg_C
ch 16	124.6	deg_C
ch 17	127.1	deg_C
ch 18	116.7	deg_C
ch 19	117.7	deg_C

EXP 01--SCAN 204--12 17 16 56 51
[redacted] Thermal Survey DAY 4"

ch 01	108.1	deg_C
ch 02	106.8	deg_C
ch 03	117.1	deg_C
ch 04	115.2	deg_C
ch 05	116.3	deg_C
ch 06	114.1	deg_C
ch 07	118.7	deg_C
ch 08	120.3	deg_C
ch 09	122.6	deg_C
ch 10	120.4	deg_C
ch 16	124.7	deg_C
ch 17	127.2	deg_C
ch 18	116.7	deg_C
ch 19	117.7	deg_C

EXP 01--SCAN 208--12 17 17 02 51
[redacted] Thermal Survey DAY 4"

ch 01	109.2	deg_C
ch 02	107.1	deg_C
ch 03	117.1	deg_C
ch 04	115.2	deg_C
ch 05	116.3	deg_C
ch 06	114.1	deg_C
ch 07	118.7	deg_C
ch 08	120.3	deg_C
ch 09	122.6	deg_C
ch 10	120.4	deg_C
ch 16	124.7	deg_C
ch 17	127.2	deg_C
ch 18	116.8	deg_C
ch 19	117.8	deg_C

17:04 TO 17:14 OPERATED SYNTH'S AT FIXED FREQUENCY RATHER THAN HOPPING.(TC1 & TC7)

EXP 01--SCAN 212--12 17 17 06 51
[redacted] Thermal Survey DAY 4"

ch 01	109.1	deg_C TC1
ch 02	105.5	deg_C
ch 03	117.1	deg_C
ch 04	115.2	deg_C
ch 05	116.4	deg_C
ch 06	114.2	deg_C
ch 07	119.3	deg_C
ch 08	120.3	deg_C
ch 09	122.9	deg_C
ch 10	120.7	deg_C
ch 16	124.8	deg_C
ch 17	127.2	deg_C
ch 18	116.8	deg_C
ch 19	117.8	deg_C

EXP 01--SCAN 216--12 17 17 10 51
[redacted] Thermal Survey DAY 4"

ch 01	108.2	deg_C
ch 02	105.8	deg_C
ch 03	117.1	deg_C
ch 04	115.1	deg_C
ch 05	116.4	deg_C
ch 06	114.2	deg_C
ch 07	119.8	deg_C
ch 08	120.4	deg_C
ch 09	123.5	deg_C
ch 10	120.4	deg_C
ch 16	124.7	deg_C
ch 17	127.2	deg_C
ch 18	116.8	deg_C
ch 19	117.8	deg_C

TRIAL TEST RUN 084

DAY 4: PAGE 7 OF 14

EXP 01--SCAN 220--12 17 17 14 51
[redacted] Thermal Survey DAY 4"

ch 01	107.9	deg_C
ch 02	105.5	deg_C
ch 03	117.1	deg_C
ch 04	115.2	deg_C
ch 05	116.4	deg_C
ch 06	114.1	deg_C
ch 07	119.4	deg_C
ch 08	120.4	deg_C
ch 09	123.0	deg_C
ch 10	120.3	deg_C
ch 16	124.7	deg_C
ch 17	127.2	deg_C
ch 18	116.8	deg_C
ch 19	117.8	deg_C

EXP 01--SCAN 224--12 17 17 18 51
[redacted] Thermal Survey DAY 4"

ch 01	108.8	deg_C
ch 02	107.2	deg_C
ch 03	117.1	deg_C
ch 04	115.2	deg_C
ch 05	116.4	deg_C
ch 06	114.2	deg_C
ch 07	118.9	deg_C
ch 08	120.3	deg_C
ch 09	122.8	deg_C
ch 10	120.4	deg_C
ch 16	124.7	deg_C
ch 17	127.2	deg_C
ch 18	116.8	deg_C
ch 19	117.8	deg_C

EXP 01--SCAN 228--12 17 17 22 51
[redacted] Thermal Survey DAY 4"

ch 01	108.7	deg_C
ch 02	106.5	deg_C
ch 03	117.1	deg_C
ch 04	115.2	deg_C
ch 05	116.4	deg_C
ch 06	114.2	deg_C
ch 07	119.4	deg_C
ch 08	120.4	deg_C
ch 09	123.6	deg_C
ch 10	120.5	deg_C
ch 16	124.8	deg_C
ch 17	127.2	deg_C
ch 18	116.8	deg_C
ch 19	117.9	deg_C

EXP 01--SCAN 232--[redacted] 17 26 51
[redacted] Thermal Survey DAY 4"

ch 01	108.6	deg_C
ch 02	106.2	deg_C
ch 03	117.1	deg_C
ch 04	115.2	deg_C
ch 05	116.4	deg_C
ch 06	114.1	deg_C
ch 07	119.6	deg_C
ch 08	120.4	deg_C
ch 09	123.3	deg_C
ch 10	120.6	deg_C
ch 16	124.7	deg_C
ch 17	127.3	deg_C
ch 18	116.8	deg_C
ch 19	117.9	deg_C

EXP 01--SCAN 236--12 17 17 30 51
[redacted] Thermal Survey DAY 4"

ch 01	108.9	deg_C
ch 02	105.4	deg_C
ch 03	117.1	deg_C
ch 04	115.2	deg_C
ch 05	116.5	deg_C
ch 06	114.2	deg_C
ch 07	118.2	deg_C
ch 08	120.4	deg_C
ch 09	122.7	deg_C
ch 10	120.6	deg_C
ch 16	124.8	deg_C
ch 17	127.3	deg_C
ch 18	116.9	deg_C
ch 19	117.9	deg_C

EXP 01--SCAN 240--12 17 17 34 51
[redacted] Thermal Survey DAY 4"

ch 01	108.8	deg_C
ch 02	105.9	deg_C
ch 03	117.1	deg_C
ch 04	115.2	deg_C
ch 05	116.4	deg_C
ch 06	114.2	deg_C
ch 07	118.6	deg_C
ch 08	120.4	deg_C
ch 09	123.3	deg_C
ch 10	120.6	deg_C
ch 16	124.8	deg_C
ch 17	127.3	deg_C
ch 18	116.9	deg_C
ch 19	117.9	deg_C

EXP 01--SCAN 244--12 17 17 38 51
[redacted] Thermal Survey DAY 4"

ch 01	108.9	deg_C
ch 02	106.7	deg_C
ch 03	117.1	deg_C
ch 04	115.3	deg_C
ch 05	116.4	deg_C
ch 06	114.2	deg_C
ch 07	119.6	deg_C
ch 08	120.4	deg_C
ch 09	123.7	deg_C
ch 10	120.6	deg_C
ch 16	124.8	deg_C
ch 17	127.3	deg_C
ch 18	116.9	deg_C
ch 19	117.9	deg_C

EXP 01--SCAN 248--12 17 17 42 51
[redacted] Thermal Survey DAY 4"

ch 01	108.8	deg_C
ch 02	105.9	deg_C
ch 03	117.1	deg_C
ch 04	115.3	deg_C
ch 05	116.5	deg_C
ch 06	114.2	deg_C
ch 07	118.5	deg_C
[redacted]		
ch 19	117.9	deg_C

[redacted] 17 46 51
[redacted] 17 50 51
[redacted] 17 54 51

37

PRINTER JAM: OMIT DATA FOR
17:46, 17:50, & 17:54 FROM DATA AVG.

EXP 01--SCAN 264--12 17 17 58 51
[redacted] Thermal Survey DAY 4"

ch 01	106.5	deg_C
ch 02	105.6	deg_C
ch 03	117.1	deg_C
ch 04	115.2	deg_C
ch 05	116.4	deg_C
ch 06	114.1	deg_C
ch 07	118.9	deg_C
ch 08	120.3	deg_C
ch 09	122.5	deg_C
ch 10	120.6	deg_C
ch 15	124.7	deg_C
ch 17	127.2	deg_C
ch 18	116.9	deg_C
ch 19	117.9	deg_C

EXP 01--SCAN 268--12 17 18 02 51
[redacted] Thermal Survey DAY 4"

ch 01	109.6	deg_C
ch 02	105.8	deg_C
ch 03	117.1	deg_C
ch 04	115.2	deg_C
ch 05	116.4	deg_C
ch 06	114.1	deg_C
ch 07	118.2	deg_C
ch 08	120.4	deg_C
ch 09	122.9	deg_C
ch 10	120.6	deg_C
ch 15	124.7	deg_C
ch 17	127.3	deg_C
ch 18	117.0	deg_C
ch 19	117.8	deg_C

END DATA AVG.

BEGIN RAMP TO LEVEL 7 TEMP/LEVEL 0 VOLTAGE

EXP 01--SCAN 272--12 17 18 06 51
[redacted] Thermal Survey DAY 4"

ch 01	111.9	deg_C
ch 02	111.4	deg_C
ch 03	119.1	deg_C
ch 04	117.2	deg_C
ch 05	118.1	deg_C
ch 06	116.4	deg_C
ch 07	120.7	deg_C
ch 08	121.5	deg_C
ch 09	124.4	deg_C
ch 10	121.7	deg_C
ch 15	126.2	deg_C
ch 17	128.7	deg_C
ch 18	118.5	deg_C
ch 19	119.0	deg_C

EXP 01--SCAN 276--12 17 18 10 51
[redacted] Thermal Survey DAY 4"

ch 01	114.6	deg_C
ch 02	113.3	deg_C
ch 03	121.0	deg_C
ch 04	119.1	deg_C
ch 05	120.0	deg_C
ch 06	118.0	deg_C
ch 07	122.3	deg_C
ch 08	123.4	deg_C
ch 09	126.2	deg_C
ch 10	124.0	deg_C
ch 15	128.3	deg_C
ch 17	130.8	deg_C
ch 18	120.3	deg_C
ch 19	121.1	deg_C

EXP 01--SCAN 280--12 17 18 14 51
[redacted] Thermal Survey DAY 4"

ch 01	115.6	deg_C
ch 02	113.3	deg_C
ch 03	122.3	deg_C
ch 04	120.4	deg_C
ch 05	121.3	deg_C
ch 06	119.2	deg_C
ch 07	122.9	deg_C
ch 08	124.9	deg_C
ch 09	126.4	deg_C
ch 10	125.5	deg_C
ch 15	128.7	deg_C
ch 17	132.2	deg_C
ch 18	121.7	deg_C
ch 19	122.6	deg_C

EXP 01--SCAN 284--12 17 18 18 51
[redacted] Thermal Survey DAY 4"

ch 01	116.5	deg_C
ch 02	112.8	deg_C
ch 03	123.2	deg_C
ch 04	121.2	deg_C
ch 05	122.3	deg_C
ch 06	119.9	deg_C
ch 07	124.9	deg_C
ch 08	125.9	deg_C
ch 09	128.1	deg_C
ch 10	126.9	deg_C
ch 15	130.6	deg_C
ch 17	133.1	deg_C
ch 18	122.8	deg_C
ch 19	123.6	deg_C

EXP 01--SCAN 288--12 17 18 22 51
[redacted] Thermal Survey DAY 4"

ch 01	114.7	deg_C
ch 02	113.1	deg_C
ch 03	123.8	deg_C
ch 04	121.9	deg_C
ch 05	122.8	deg_C
ch 06	120.4	deg_C
ch 07	124.8	deg_C
ch 08	126.6	deg_C
ch 09	128.3	deg_C
ch 10	127.1	deg_C
ch 15	131.3	deg_C
ch 17	133.7	deg_C
ch 18	123.3	deg_C
ch 19	124.3	deg_C

EXP 01--SCAN 292--12 17 18 26 51
[redacted] Thermal Survey DAY 4"

ch 01	115.7	deg_C
ch 02	113.8	deg_C
ch 03	124.2	deg_C
ch 04	122.3	deg_C
ch 05	123.3	deg_C
ch 06	120.8	deg_C
ch 07	125.0	deg_C
ch 08	127.1	deg_C
ch 09	128.8	deg_C
ch 10	127.6	deg_C
ch 15	131.7	deg_C
ch 17	134.1	deg_C
ch 18	123.7	deg_C
ch 19	124.6	deg_C

EXP 01--SCAN 296--12 17 18 30 51
[redacted] Thermal Survey DAY 4"

ch 01	115.9	deg_C
ch 02	113.1	deg_C
ch 03	124.5	deg_C
ch 04	122.5	deg_C
ch 05	123.5	deg_C
ch 06	120.8	deg_C
ch 07	125.5	deg_C
ch 08	127.4	deg_C
ch 09	129.0	deg_C
ch 10	127.9	deg_C
ch 15	132.0	deg_C
ch 17	134.4	deg_C
ch 18	124.0	deg_C
ch 19	125.1	deg_C

18:32 BEGIN DWELL 7/0

EXP 01--SCAN 300--12 17 18 34 51
[redacted] Thermal Survey DAY 4"
BEGIN DATA AVG.

ch 01	115.0	deg_C
ch 02	113.8	deg_C
ch 03	124.6	deg_C
ch 04	122.7	deg_C
ch 05	124.5	deg_C
ch 06	121.0	deg_C
ch 07	126.5	deg_C
ch 08	127.6	deg_C
ch 09	129.7	deg_C
ch 10	128.0	deg_C
ch 16	132.1	deg_C
ch 17	134.6	deg_C
ch 18	124.3	deg_C
ch 19	125.3	deg_C

EXP 01--SCAN 304--12 17 18 38 51
[redacted] Thermal Survey DAY 4"

ch 01	116.1	deg_C
ch 02	113.3	deg_C
ch 03	124.7	deg_C
ch 04	122.8	deg_C
ch 05	124.6	deg_C
ch 06	121.1	deg_C
ch 07	126.9	deg_C
ch 08	127.7	deg_C
ch 09	130.6	deg_C
ch 10	128.2	deg_C
ch 16	132.2	deg_C
ch 17	134.7	deg_C
ch 18	124.5	deg_C
ch 19	125.4	deg_C

EXP 01--SCAN 308--12 17 18 42 51
[redacted] Thermal Survey DAY 4"

ch 01	115.8	deg_C
ch 02	114.2	deg_C
ch 03	124.8	deg_C
ch 04	122.8	deg_C
ch 05	124.4	deg_C
ch 06	121.1	deg_C
ch 07	127.2	deg_C
ch 08	127.8	deg_C
ch 09	130.8	deg_C
ch 10	128.3	deg_C
ch 16	132.3	deg_C
ch 17	134.8	deg_C
ch 18	124.6	deg_C
ch 19	125.5	deg_C

EXP 01--SCAN 312--12 17 18 46 51
[redacted] Thermal Survey DAY 4"

ch 01	115.8	deg_C
ch 02	114.8	deg_C
ch 03	124.8	deg_C
ch 04	122.9	deg_C
ch 05	123.2	deg_C
ch 06	121.1	deg_C
ch 07	126.3	deg_C
ch 08	127.8	deg_C
ch 09	131.0	deg_C
ch 10	128.3	deg_C
ch 16	132.4	deg_C
ch 17	134.8	deg_C
ch 18	124.6	deg_C
ch 19	125.5	deg_C

EXP 01--SCAN 316--12 17 18 50 51
[redacted] Thermal Survey DAY 4"

ch 01	115.7	deg_C
ch 02	113.6	deg_C
ch 03	124.9	deg_C
ch 04	122.9	deg_C
ch 05	123.4	deg_C
ch 06	121.1	deg_C
ch 07	125.9	deg_C
ch 08	127.8	deg_C
ch 09	129.5	deg_C
ch 10	128.3	deg_C
ch 16	132.4	deg_C
ch 17	134.8	deg_C
ch 18	124.4	deg_C
ch 19	125.5	deg_C

EXP 01--SCAN 320--12 17 18 54 51
[redacted] Thermal Survey DAY 4"

ch 01	115.7	deg_C
ch 02	113.1	deg_C
ch 03	124.9	deg_C
ch 04	122.8	deg_C
ch 05	124.4	deg_C
ch 06	121.1	deg_C
ch 07	126.5	deg_C
ch 08	127.8	deg_C
ch 09	129.7	deg_C
ch 10	128.4	deg_C
ch 16	132.4	deg_C
ch 17	134.8	deg_C
ch 18	124.5	deg_C
ch 19	125.6	deg_C

EXP 01--SCAN 324--12 17 18 58 51
[redacted] Thermal Survey DAY 4"

ch 01	115.6	deg_C
ch 02	113.2	deg_C
ch 03	124.9	deg_C
ch 04	123.0	deg_C
ch 05	124.1	deg_C
ch 06	121.2	deg_C
ch 07	126.5	deg_C
ch 08	127.9	deg_C
ch 09	129.9	deg_C
ch 10	128.4	deg_C
ch 16	132.4	deg_C
ch 17	134.9	deg_C
ch 18	124.7	deg_C
ch 19	125.6	deg_C

EXP 01--SCAN 328--12 17 19 02 51
[redacted] Thermal Survey DAY 4"

ch 01	115.2	deg_C
ch 02	114.2	deg_C
ch 03	124.9	deg_C
ch 04	123.0	deg_C
ch 05	124.2	deg_C
ch 06	121.1	deg_C
ch 07	127.1	deg_C
ch 08	127.9	deg_C
ch 09	131.1	deg_C
ch 10	128.5	deg_C
ch 16	132.5	deg_C
ch 17	134.9	deg_C
ch 18	124.7	deg_C
ch 19	125.6	deg_C

EXP 01--SCAN 332--12 17 19 06 51
[redacted] Thermal Survey DAY 4"

ch 01	115.0	deg_C
ch 02	114.3	deg_C
ch 03	124.9	deg_C
ch 04	123.0	deg_C
ch 05	123.3	deg_C
ch 06	121.1	deg_C
ch 07	125.9	deg_C
ch 08	127.9	deg_C
ch 09	129.8	deg_C
ch 10	128.4	deg_C
ch 16	132.5	deg_C
ch 17	134.9	deg_C
ch 18	124.6	deg_C
ch 19	125.7	deg_C

TRIAL TEST RUN 086

EXP 01--SCAN 336--12 17 19 10 51
[redacted] Thermal Survey DAY 4"

ch 01	115.0	deg_C
ch 02	113.3	deg_C
ch 03	124.9	deg_C
ch 04	123.0	deg_C
ch 05	124.4	deg_C
ch 06	121.1	deg_C
ch 07	126.5	deg_C
ch 08	127.9	deg_C
ch 09	129.9	deg_C
ch 10	128.5	deg_C
ch 16	132.5	deg_C
ch 17	134.9	deg_C
ch 18	124.7	deg_C
ch 19	125.7	deg_C

EXP 01--SCAN 340--12 17 19 14 51
[redacted] Thermal Survey DAY 4"

ch 01	114.8	deg_C
ch 02	114.1	deg_C
ch 03	124.9	deg_C
ch 04	123.0	deg_C
ch 05	123.4	deg_C
ch 06	121.1	deg_C
ch 07	125.9	deg_C
ch 08	127.9	deg_C
ch 09	129.8	deg_C
ch 10	128.5	deg_C
ch 16	132.5	deg_C
ch 17	134.9	deg_C
ch 18	124.7	deg_C
ch 19	125.7	deg_C

EXP 01--SCAN 344--12 17 19 18 51
[redacted] Thermal Survey DAY 4"

ch 01	114.7	deg_C
ch 02	113.7	deg_C
ch 03	124.9	deg_C
ch 04	123.1	deg_C
ch 05	123.4	deg_C
ch 06	121.1	deg_C
ch 07	125.9	deg_C
ch 08	127.9	deg_C
ch 09	129.7	deg_C
ch 10	128.5	deg_C
ch 16	132.5	deg_C
ch 17	134.9	deg_C
ch 18	124.7	deg_C
ch 19	125.7	deg_C

EXP 01--SCAN 348--[redacted] / 19 22 51
[redacted] Thermal Survey DAY 4"

ch 01	114.8	deg_C
ch 02	113.4	deg_C
ch 03	124.9	deg_C
ch 04	123.0	deg_C
ch 05	123.9	deg_C
ch 06	121.1	deg_C
ch 07	126.3	deg_C
ch 08	127.9	deg_C
ch 09	129.8	deg_C
ch 10	128.4	deg_C
ch 16	132.5	deg_C
ch 17	134.9	deg_C
ch 18	124.7	deg_C
ch 19	125.7	deg_C

EXP 01--SCAN 352--12 17 19 26 51
[redacted] Thermal Survey DAY 4"

ch 01	112.3	deg_C
ch 02	114.6	deg_C
ch 03	124.9	deg_C
ch 04	123.0	deg_C
ch 05	123.3	deg_C
ch 06	121.1	deg_C
ch 07	126.1	deg_C
ch 08	127.9	deg_C
ch 09	130.4	deg_C
ch 10	128.4	deg_C
ch 16	132.5	deg_C
ch 17	134.9	deg_C
ch 18	124.6	deg_C
ch 19	125.7	deg_C

EXP 01--SCAN 356--12 17 19 30 51
[redacted] Thermal Survey DAY 4"

ch 01	112.6	deg_C
ch 02	114.9	deg_C
ch 03	124.9	deg_C
ch 04	123.0	deg_C
ch 05	123.2	deg_C
ch 06	121.1	deg_C
ch 07	126.0	deg_C
ch 08	127.9	deg_C
ch 09	130.2	deg_C
ch 10	128.5	deg_C
ch 16	132.5	deg_C
ch 17	134.9	deg_C
ch 18	124.7	deg_C
ch 19	125.7	deg_C

EXP 01--SCAN 360--12 17 19 34 51
[redacted] Thermal Survey DAY 4"

ch 01	112.7	deg_C
ch 02	114.5	deg_C
ch 03	124.9	deg_C
ch 04	123.0	deg_C
ch 05	123.4	deg_C
ch 06	121.0	deg_C
ch 07	126.0	deg_C
ch 08	127.9	deg_C
ch 09	129.7	deg_C
ch 10	128.4	deg_C
ch 16	132.5	deg_C
ch 17	134.9	deg_C
ch 18	124.6	deg_C
ch 19	125.7	deg_C

END DATA AVG.
BEGIN RAMP TO LEVEL 8 TEMP/LEVEL 0 VOLTAGE

EXP 01--SCAN 364--12 17 19 38 51
[redacted] Thermal Survey DAY 4"

ch 01	119.6	deg_C
ch 02	119.3	deg_C
ch 03	126.8	deg_C
ch 04	124.9	deg_C
ch 05	126.2	deg_C
ch 06	122.9	deg_C
ch 07	128.4	deg_C
ch 08	129.0	deg_C
ch 09	131.4	deg_C
ch 10	128.6	deg_C
ch 16	133.9	deg_C
ch 17	136.3	deg_C
ch 18	126.3	deg_C
ch 19	126.8	deg_C

EXP 01--SCAN 368--12 17 19 42 51
[redacted] Thermal Survey DAY 4"

ch 01	120.7	deg_C
ch 02	119.8	deg_C
ch 03	126.8	deg_C
ch 04	126.7	deg_C
ch 05	126.3	deg_C
ch 06	124.8	deg_C
ch 07	129.9	deg_C
ch 08	130.6	deg_C
ch 09	132.9	deg_C
ch 10	131.5	deg_C
ch 16	135.9	deg_C
ch 17	138.3	deg_C
ch 18	128.1	deg_C
ch 19	128.7	deg_C

EXP 01--SCAN 372--12 17 19 46 51
[redacted] Thermal Survey DAY 4"

ch	01	122.5 deg_C
ch	02	121.5 deg_C
ch	03	129.9 deg_C
ch	04	128.0 deg_C
ch	05	128.5 deg_C
ch	06	125.7 deg_C
ch	07	131.2 deg_C
ch	08	132.3 deg_C
ch	09	136.3 deg_C
ch	10	133.0 deg_C
ch	15	137.2 deg_C
ch	17	139.7 deg_C
ch	18	129.4 deg_C
ch	19	130.3 deg_C

EXP 01--SCAN 376--12 17 19 50 51
[redacted] Thermal Survey DAY 4"

ch	01	123.7 deg_C
ch	02	120.9 deg_C
ch	03	130.8 deg_C
ch	04	128.9 deg_C
ch	05	130.6 deg_C
ch	06	126.5 deg_C
ch	07	132.6 deg_C
ch	08	133.3 deg_C
ch	09	135.9 deg_C
ch	10	134.0 deg_C
ch	15	138.2 deg_C
ch	17	140.6 deg_C
ch	18	130.5 deg_C
ch	19	131.3 deg_C

EXP 01--SCAN 380--12 17 19 54 51
[redacted] Thermal Survey DAY 4"

ch	01	123.9 deg_C
ch	02	121.9 deg_C
ch	03	131.5 deg_C
ch	04	129.6 deg_C
ch	05	130.9 deg_C
ch	06	126.8 deg_C
ch	07	133.5 deg_C
ch	08	134.1 deg_C
ch	09	137.1 deg_C
ch	10	134.7 deg_C
ch	15	138.9 deg_C
ch	17	141.3 deg_C
ch	18	131.3 deg_C
ch	19	132.0 deg_C

EXP 01--SCAN 384--12 17 19 58 51
[redacted] Thermal Survey DAY 4"

ch	01	123.9 deg_C
ch	02	122.4 deg_C
ch	03	131.9 deg_C
ch	04	130.0 deg_C
ch	05	130.9 deg_C
ch	06	127.0 deg_C
ch	07	133.6 deg_C
ch	08	134.5 deg_C
ch	09	137.7 deg_C
ch	10	135.2 deg_C
ch	15	139.3 deg_C
ch	17	141.7 deg_C
ch	18	131.8 deg_C
ch	19	132.6 deg_C

EXP 01--SCAN 388--12 17 20 02 51
[redacted] Thermal Survey DAY 4"

ch	01	120.5 deg_C
ch	[illegible]	[illegible]
ch	[illegible]	[illegible]
ch	05	130.5 deg_C
ch	06	127.2 deg_C
ch	07	133.4 deg_C
ch	08	134.8 deg_C
ch	09	137.5 deg_C
ch	10	135.4 deg_C
ch	15	139.5 deg_C
ch	17	142.0 deg_C
ch	18	132.0 deg_C
ch	19	133.0 deg_C

20:04 BEGIN DWELL 8/0
BEGIN DATA AVG.

EXP 01--SCAN 392--12 17 20 06 51
[redacted] Thermal Survey DAY 4"

ch	01	103.8 deg_C
ch	02	122.3 deg_C
ch	03	132.3 deg_C
ch	04	130.5 deg_C
ch	05	131.7 deg_C
ch	06	127.4 deg_C
ch	07	134.5 deg_C
ch	08	135.1 deg_C
ch	09	138.2 deg_C
ch	10	136.7 deg_C
ch	15	139.7 deg_C
ch	17	142.1 deg_C
ch	18	132.5 deg_C
ch	19	133.2 deg_C

20:06 TC1 DROPS OUT &
IS FLUCTUATING. IS
INACCURATE FOR DATA.

EXP 01--SCAN 396--12 17 20 10 51
[redacted] Thermal Survey DAY 4"

ch	01	93.1 deg_C
ch	02	120.9 deg_C
ch	03	132.5 deg_C
ch	04	130.7 deg_C
ch	05	132.1 deg_C
ch	06	127.6 deg_C
ch	07	134.1 deg_C
ch	08	135.2 deg_C
ch	09	137.5 deg_C
ch	10	135.7 deg_C
ch	15	139.6 deg_C
ch	17	142.3 deg_C
ch	18	132.6 deg_C
ch	19	133.3 deg_C

EXP 01--SCAN 400--12 17 20 14 51
[redacted] Thermal Survey DAY 4"

ch	01	103.8 deg_C
ch	02	120.7 deg_C
ch	03	132.5 deg_C
ch	04	130.8 deg_C
ch	05	132.1 deg_C
ch	06	127.6 deg_C
ch	07	133.9 deg_C
ch	08	135.4 deg_C
ch	09	137.6 deg_C
ch	10	135.6 deg_C
ch	15	139.9 deg_C
ch	17	142.4 deg_C
ch	18	132.6 deg_C
ch	19	133.4 deg_C

EXP 01--SCAN 404--12 17 20 18 51
[redacted] Thermal Survey DAY 4"

ch	01	85.7 deg_C
ch	02	121.0 deg_C
ch	03	132.6 deg_C
ch	04	130.9 deg_C
ch	05	132.4 deg_C
ch	06	127.5 deg_C
ch	07	134.7 deg_C
ch	08	135.5 deg_C
ch	09	138.3 deg_C
ch	10	135.9 deg_C
ch	15	140.0 deg_C
ch	17	142.5 deg_C
ch	18	132.7 deg_C
ch	19	133.5 deg_C

EXP 01--SCAN 408--12 17 20 22 51
[redacted] Thermal Survey DAY 4"

ch 01	76.7	deg_C
ch 02	122.0	deg_C
ch 03	132.6	deg_C
ch 04	130.8	deg_C
ch 05	131.7	deg_C
ch 06	127.5	deg_C
ch 07	134.7	deg_C
ch 08	135.5	deg_C
ch 09	136.6	deg_C
ch 10	136.0	deg_C
ch 16	140.0	deg_C
ch 17	142.5	deg_C
ch 18	132.8	deg_C
ch 19	133.5	deg_C

EXP 01--SCAN 412--12 17 20 26 51
[redacted] Thermal Survey DAY 4"

ch 01	122.9	deg_C
ch 02	122.4	deg_C
ch 03	132.5	deg_C
ch 04	130.8	deg_C
ch 05	131.9	deg_C
ch 06	127.4	deg_C
ch 07	134.6	deg_C
ch 08	135.5	deg_C
ch 09	138.1	deg_C
ch 10	136.0	deg_C
ch 16	140.0	deg_C
ch 17	142.5	deg_C
ch 18	132.6	deg_C
ch 19	133.4	deg_C

PRINTER JAM: LOST DATA TC5

EXP 01--SCAN 416--12 17 20 30 51
[redacted] Thermal Survey DAY 4"

ch 01	122.6	deg_C
ch 02	121.0	deg_C
ch 03	132.7	deg_C
ch 04	130.8	deg_C
ch 05	132.3	deg_C
ch 06	127.4	deg_C
ch 07	134.6	deg_C
ch 08	135.5	deg_C
ch 09	138.1	deg_C
ch 10	136.0	deg_C
ch 16	140.0	deg_C
ch 17	142.5	deg_C
ch 18	132.6	deg_C
ch 19	133.4	deg_C

EXP 01--SCAN 420--[illegible] 20 34 51
[redacted] Thermal Survey DAY 4"

TC1 RECOVERS (BEGIN ITS AVG. HERE)

ch 01	128.6	deg_C
ch 02	122.2	deg_C
ch 03	132.7	deg_C
ch 04	130.6	deg_C
ch 05	131.0	deg_C
ch 06	127.0	deg_C
ch 07	134.2	deg_C
ch 08	135.4	deg_C
ch 09	138.4	deg_C
ch 10	136.0	deg_C
ch 16	140.1	deg_C
ch 17	142.5	deg_C
ch 18	132.4	deg_C
ch 19	133.4	deg_C

EXP 01--SCAN 424--12 17 20 38 51
[redacted] Thermal Survey DAY 4"

ch 01	128.7	deg_C
ch 02	120.9	deg_C
ch 03	132.7	deg_C
ch 04	130.7	deg_C
ch 05	131.9	deg_C
ch 06	126.1	deg_C
ch 07	134.2	deg_C
ch 08	135.4	deg_C
ch 09	137.4	deg_C
ch 10	136.0	deg_C
ch 16	140.1	deg_C
ch 17	142.5	deg_C
ch 18	132.4	deg_C
ch 19	133.4	deg_C

EXP 01--SCAN 428--12 17 20 42 51
[redacted] Thermal Survey DAY 4"

ch 01	128.7	deg_C
ch 02	122.2	deg_C
ch 03	132.6	deg_C
ch 04	130.8	deg_C
ch 05	131.7	deg_C
ch 06	126.1	deg_C
ch 07	134.2	deg_C
ch 08	135.4	deg_C
ch 09	138.5	deg_C
ch 10	136.0	deg_C
ch 16	140.1	deg_C
ch 17	142.5	deg_C
ch 18	132.6	deg_C
ch 19	133.4	deg_C

EXP 01--SCAN 432--12 17 20 46 51
[redacted] Thermal Survey DAY 4"

ch 01	128.6	deg_C
ch 02	121.9	deg_C
ch 03	132.6	deg_C
ch 04	130.8	deg_C
ch 05	131.9	deg_C
ch 06	126.1	deg_C
ch 07	134.2	deg_C
ch 08	135.3	deg_C
ch 09	138.5	deg_C
ch 10	136.0	deg_C
ch 16	140.1	deg_C
ch 17	142.5	deg_C
ch 18	132.6	deg_C
ch 19	133.4	deg_C

EXP 01--SCAN 436--12 17 20 50 51
[redacted] Thermal Survey DAY 4"

ch 01	128.6	deg_C
ch 02	122.4	deg_C
ch 03	132.6	deg_C
ch 04	130.8	deg_C
ch 05	130.9	deg_C
ch 06	126.3	deg_C
ch 07	134.1	deg_C
ch 08	135.4	deg_C
ch 09	138.5	deg_C
ch 10	136.0	deg_C
ch 16	140.1	deg_C
ch 17	142.5	deg_C
ch 18	132.5	deg_C
ch 19	133.4	deg_C

EXP 01--SCAN 440--12 17 20 54 51
[redacted] Thermal Survey DAY 4"

ch 01	128.6	deg_C
ch 02	121.5	deg_C
ch 03	132.7	deg_C
ch 04	130.7	deg_C
ch 05	130.9	deg_C
ch 06	124.8	deg_C
ch 07	134.9	deg_C
ch 08	135.4	deg_C
ch 09	137.6	deg_C
ch 10	136.0	deg_C
ch 16	140.1	deg_C
ch 17	142.5	deg_C
ch 18	132.4	deg_C
ch 19	133.4	deg_C

TRIAL TEST RUN 089

DAY 4: PAGE 12 OF 14

EXP 01--SCAN 444--12 17 20 58 S1
[redacted] Thermal Survey DAY 4"

ch 01	128.7	deg_C
ch 02	122.8	deg_C
ch 03	132.7	deg_C
ch 04	130.8	deg_C
ch 05	131.3	deg_C
ch 06	124.8	deg_C
ch 07	135.2	deg_C
ch 08	135.5	deg_C
ch 09	136.2	deg_C
ch 10	136.1	deg_C
ch 16	140.2	deg_C
ch 17	142.5	deg_C
ch 18	132.5	deg_C
ch 19	133.4	deg_C

EXP 01--SCAN 456--12 17 21 10 S1
[redacted] Thermal Survey DAY 4"

ch 01	128.6	deg_C
ch 02	121.7	deg_C
ch 03	132.7	deg_C
ch 04	130.8	deg_C
ch 05	131.0	deg_C
ch 06	125.4	deg_C
ch 07	135.2	deg_C
ch 08	135.5	deg_C
ch 09	137.6	deg_C
ch 10	135.8	deg_C
ch 16	140.1	deg_C
ch 17	142.6	deg_C
ch 18	132.5	deg_C
ch 19	133.5	deg_C

EXP 01--SCAN 468--12 17 21 22 S1
[redacted] Thermal Survey DAY 4"

ch 01	128.6	deg_C
ch 02	121.5	deg_C
ch 03	132.7	deg_C
ch 04	130.8	deg_C
ch 05	132.2	deg_C
ch 06	125.1	deg_C
ch 07	135.2	deg_C
ch 08	135.5	deg_C
ch 09	138.5	deg_C
ch 10	135.8	deg_C
ch 16	140.1	deg_C
ch 17	142.6	deg_C
ch 18	132.7	deg_C
ch 19	133.5	deg_C

EXP 01--SCAN 448--12 17 21 02 S1
[redacted] Thermal Survey DAY 4"

ch 01	128.7	deg_C
ch 02	122.4	deg_C
ch 03	132.7	deg_C
ch 04	130.8	deg_C
ch 05	131.5	deg_C
ch 06	125.3	deg_C
ch 07	135.2	deg_C
ch 08	135.5	deg_C
ch 09	138.5	deg_C
ch 10	136.1	deg_C
ch 16	140.2	deg_C
ch 17	142.6	deg_C
ch 18	132.5	deg_C
ch 19	133.5	deg_C

EXP 01--SCAN 460--12 17 21 14 S1
[redacted] Thermal Survey DAY 4"

ch 01	128.6	deg_C
ch 02	121.3	deg_C
ch 03	132.7	deg_C
ch 04	130.8	deg_C
ch 05	131.0	deg_C
ch 06	125.7	deg_C
ch 07	135.2	deg_C
ch 08	135.5	deg_C
ch 09	137.5	deg_C
ch 10	135.8	deg_C
ch 16	140.1	deg_C
ch 17	142.6	deg_C
ch 18	132.6	deg_C
ch 19	133.5	deg_C

EXP 01--SCAN 472--12 17 21 26 S1
[redacted] Thermal Survey DAY 4"

ch 01	128.6	deg_C
ch 02	121.4	deg_C
ch 03	132.7	deg_C
ch 04	130.8	deg_C
ch 05	132.2	deg_C
ch 06	125.3	deg_C
ch 07	135.2	deg_C
ch 08	135.5	deg_C
ch 09	138.6	deg_C
ch 10	135.8	deg_C
ch 16	140.0	deg_C
ch 17	142.5	deg_C
ch 18	132.7	deg_C
ch 19	133.5	deg_C

EXP 01--SCAN 452--12 17 21 06 S1
[redacted] Thermal Survey DAY 4"

ch 01	128.6	deg_C
ch 02	121.2	deg_C
ch 03	132.7	deg_C
ch 04	130.8	deg_C
ch 05	131.5	deg_C
ch 06	124.7	deg_C
ch 07	135.2	deg_C
ch 08	135.5	deg_C
ch 09	137.7	deg_C
ch 10	135.8	deg_C
ch 16	140.1	deg_C
ch 17	142.6	deg_C
ch 18	132.6	deg_C
ch 19	133.5	deg_C

EXP 01--SCAN 464--12 17 21 18 S1
[redacted] Thermal Survey DAY 4"

ch 01	128.7	deg_C
ch 02	122.0	deg_C
ch 03	132.7	deg_C
ch 04	130.8	deg_C
ch 05	131.6	deg_C
ch 06	125.5	deg_C
ch 07	135.2	deg_C
ch 08	135.5	deg_C
ch 09	138.5	deg_C
ch 10	135.8	deg_C
ch 16	140.1	deg_C
ch 17	142.6	deg_C
ch 18	132.6	deg_C
ch 19	133.5	deg_C

EXP 01--SCAN 476--12 17 21 30 S1
[redacted] Thermal Survey DAY 4"

ch 01	128.6	deg_C
ch 02	122.3	deg_C
ch 03	132.6	deg_C
ch 04	130.8	deg_C
ch 05	131.0	deg_C
ch 06	125.7	deg_C
ch 07	135.2	deg_C
ch 08	135.6	deg_C
ch 09	137.7	deg_C
ch 10	135.8	deg_C
ch 16	140.1	deg_C
ch 17	142.5	deg_C
ch 18	132.5	deg_C
ch 19	133.5	deg_C

END DATA AVG. (TC5 DATA LOST FOR 20:26)

TRIAL TEST RUN
090

DAY 4 : PAGE 13 OF 14

POST 21:30

XP 01--SCAN 100--12 17 21 34 51

[redacted] Thermal Survey DAY 4"

ch	01	124.4	deg_C
ch	02	110.0	deg_C
ch	03	128.3	deg_C
ch	04	127.6	deg_C
ch	05	128.5	deg_C
ch	06	125.0	deg_C
ch	07	128.9	deg_C
ch	08	129.4	deg_C
ch	09	131.3	deg_C
ch	10	130.2	deg_C
ch	16	130.7	deg_C
ch	17	130.2	deg_C
ch	18	128.7	deg_C
ch	19	129.4	deg_C

AFTER 21:30 TURNED UUT OFF & REDUCED TEMPERATURE TO ROOM AMBIENT
VOLTAGE STRESS WAS MAINTAINED AT LEVEL 0 FOR DAY 4.

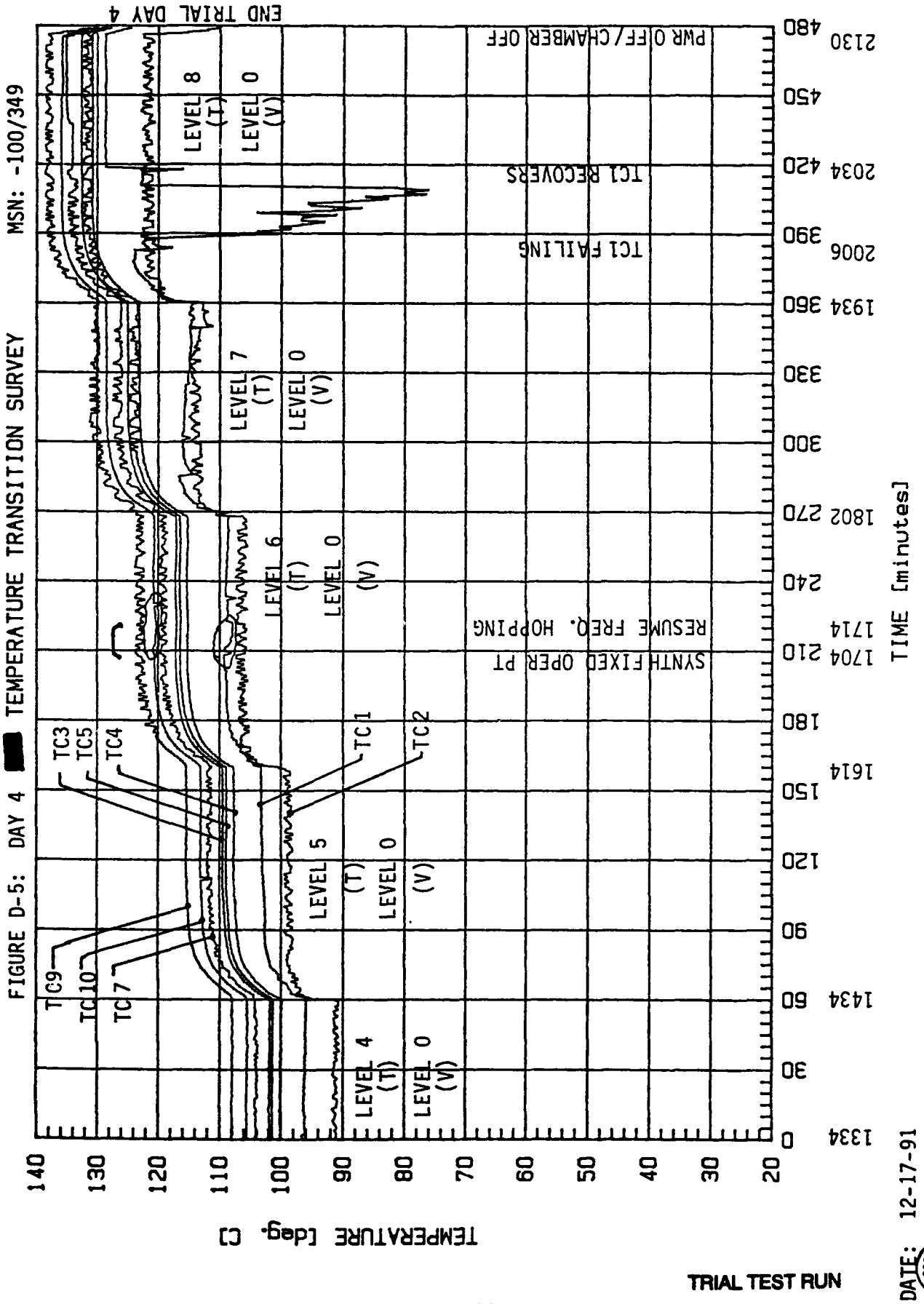


FIGURE D-5: DAY 4 TEMPERATURE TRANSITION SURVEY
MSN: -100/349
END TRIAL DAY 4
PWR OFF/CHAMBER OFF
TC1 RECOVERS
TC1 FAILING
SYNTH FIXED OPER PT
RESUME FREQ. HOPPING
LEVEL 8 (T)
LEVEL 0 (V)
LEVEL 7 (T)
LEVEL 0 (V)
LEVEL 6 (T)
LEVEL 0 (V)
LEVEL 5 (T)
LEVEL 0 (V)
LEVEL 4 (T)
LEVEL 0 (V)
TC3
TC5
TC4
TC1
TC2
TC9
TC10
TC7
TEMPERATURE [deg. C]
TIME [minutes]
140
130
120
110
100
90
80
70
60
50
40
30
20
0
30
60
90
120
150
180
210
240
270
300
330
360
390
420
450
480
1334
1434
1614
1704
1714
1802
1934
2006
2034
2130
DATE: 12-17-91
TRIAL TEST RUN

SECTION 4

Test Data Sheets
Performance Monitoring
prepared by S. D. Mueller

E .804

HUGHES AIRCRAFT CO.
GROUND SYSTEMS GROUP

REF. NO. 277804

HISTORICAL RECORD TAG

MODEL LEVEL		SYST. NOMEN.	
UNIT SRU			
PART OR ASSEMBLY NAME	PART OR ASSEMBLY NO.		LTR. CHANGE
1650062-100	SYNTH/DETECTOR ASSY		
PLANNING CHANGE #	DEPT. ORIGINATED	NEXT ASSEMBLY NO.	HAC MFG. SERIAL NO.
EFFECTIVE AMENDING DOCUMENTS		W/O NO.	SERIAL NO.
			349

-100 MSN 349

ITEM NO.	ORIG. INSP. STAMP	DATE	DETAILED DESCRIPTION	INSP./TEST ACCEPT.
01	HAC TEST V-135		PASSES OUTPUT POWER & DETECTOR SENSITIVITY AT	HAC TEST V-135
		8-3-89	TR GROUP LEVEL TEST	8-3-89
02	HAC TEST V-869	8/10/89	Removed cover for test. A4 Detector 1650092 S/N 144 A2 Synth 1634609 S/N 291 (SEE ITEM BELOW) A3 Synth 1634609 S/N 300	GSG 92466 TEST
03	GSG 92466 TEST		Removed A4 card & Stored	GSG 92466 TEST
04	GSG 92466 TEST		ALL Dip Mica Caps Bandaged	GSG 92466 TEST
05	GSG 92466 TEST		6 G. Random Vib	GSG 92466 TEST
06	HAC TEST V-869		Temp test 10 cycles	HAC TEST V-869
07	GSG 92466 TEST	11/24/91	A2 SYNTH S/N 291 WILL NOT CENTER AT ZERO VDC. FOR FREQ SWEEP TEST #3, A2R4 WOULD ADJUST VOLTAGE AT STP J. OUTPUT OF A2U12 pin 6 is CONSTANT. OUTPUT IS ABE FREQUENCY. REMOVE A2 PN 1634609 S/N 291 and replace. AT A2 with P/N 1634609 S/N 225.	GSG 92466 TEST 11/24/91
08	GSG 92466 TEST	11/25/91	Acceptance Test Complete Room Temp	GSG 92466 TEST 11/25/91
09	GSG 92466 TEST	11/25/91	ENGR'G NOTE: Subjected unit to +68°C temperature as trial test for Accelerated Step-Stress Screen Project. Thermocouples affixed to A3-U3, U11, Q6; A2-U10, A4-U4, U6, U7, U11 and AR2 w/ cement. ±5Vdc subjected to 8% increase; ±15Vdc to 4% increase.	GSG 92466 TEST 11/25/91
10	GSG 92466 TEST	11/25/91	ENGR'G NOTE: Detector I&Q outputs railed to +5V side due to thermal increase of resistor A4-R4 & heating of zener A4-VR1 (adjacent).	GSG 92466 TEST 11/25/91
11	GSG 92466 TEST	11/26/91	Removed A4-VR1 (clipped) & -15V side of A4-R4 and soldered wires to -5V side and ground to facilitate use of an external -5V regulated supply. This to continue step-stress testing.	GSG 92466 TEST 11/26/91
12	GSG 92466 TEST	11/26/91	ENGR'G NOTE: A2 Synth 92V16 Cont'd Step-stress testing Through +91°C and 16% increase to ±5Vdc, 8% increase to ±15Vdc supply lines. Synth Dijon A2 degrading. Intermittent failure.	GSG 92466 TEST 11/26/91
13	GSG 92466 TEST	11/27/91	ENTR'G NOTE: Cont'd testing thru level 5 98°C, 20% for ±5V, 10% for ±15V. Verified at room temp that output power of A2 is very Low & degradation has persisted. However, unit has not reached catastrophic failure. Testing completed 11/27/91 17:36.	GSG 92466 TEST 11/27/91
14.	GSG 92466 TEST	12-17-91	CONTINUED TEST WITH UUT AT NOMINAL VOLTAGES. SUBJECTED UNIT TO LEVEL 4, 5, 6, 7, AND 8 (ONLY TEMPERATURE STRESSES) Unit has non-recoverable failure of Synthesizer.	GSG 92466 TEST 12-17-91

FORM NO. 4932-GS REV. 11-85

DATE: [redacted] TIME: [redacted]AM

11-24-91 (GSG 92466 TEST) 09:51

Synth_ref= 1499990
Freq_mod_ref= 9999980
Sp_clock_output = 0
Phase_lo_output = -.48
Phase_if_output = 0
Up_dn_conv_lo = .92
313.75_lo = 12 dBm /313.75181E6MHz

TEST STATION AUTO CALIBRATION
TEST OF UUT -100 MSN: 349
(PRETEST CONDITIONS)
TP-000-part number-0811-0 Rev.G.

Channel	Freq	Dn_conv_output	Synth_lo_output	Hit_sgnl_i_o
50	684	-.09	-.68	-.14
49	687	-.02	-.71	-.14
48	690	.01	-.73	-.18
47	693	.06	-.71	-.27
46	696	.11	-.69	-.35
45	699	.2	-.67	-.45
44	702	.27	-.66	-.54
43	705	.35	-.65	-.61
42	708	.37	-.69	-.64
41	711	.4	-.73	-.62
40	714	.37	-.76	-.61
39	717	.3	-.77	-.62
38	720	.24	-.73	-.61
37	723	.16	-.69	-.62
36	726	.11	-.61	-.68
35	729	.06	-.53	-.74
34	732	.03	-.47	-.82
33	735	.02	-.41	-.87
32	738	.03	-.41	-.91
31	741	.01	-.42	-.89
30	744	.01	-.44	-.84
29	747	.01	-.48	-.8
28	750	-.01	-.49	-.73
27	753	-.04	-.5	-.68
26	756	-.07	-.47	-.67
25	759	-.07	-.4	-.68
24	762	-.08	-.33	-.7
23	765	-.06	-.3	-.72
22	768	-.06	-.26	-.78
21	771	-.02	-.25	-.79
20	774	-.01	-.3	-.77
19	777	-.01	-.31	-.72
18	825	-.18	-.05	-.55
17	828	-.22	-.02	-.61
16	831	-.23	-.01	-.66
15	834	-.24	.03	-.71
14	837	-.29	.03	-.7
13	882	-.37	.01	-.56
12	885	-.32	-.02	-.51
11	888	-.27	-.04	-.51
10	891	-.26	-.06	-.54
9	894	-.27	-.07	-.6
8	897	-.26	-.09	-.64
7	900	-.31	-.09	-.7
6	903	-.33	-.1	-.7
5	906	-.37	-.14	-.67
4	909	-.37	-.18	-.61
3	912	-.37	-.23	-.54
2	915	-.37	-.28	-.47
1	918	-.36	-.33	-.44
0	921	-.36	-.36	-.45

095

UUT Precondition Room Temp

FAIL DATA (if any) of Power Output requirements will be printed between the starred borders.

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TEST #4

FULL PRINT-OUT OF Power Output and Frequency [redacted] Ser. # -100/349

(GSG 92466 TEST) 11-24-91

Power at J5 is 11.3 dBm @ 684.0 MHz (Spec=+9dBm minimum).
Power at J5 is 11.4 dBm @ 687.0 MHz (Spec=+9dBm minimum).
Power at J5 is 11.5 dBm @ 690.0 MHz (Spec=+9dBm minimum).
Power at J5 is 11.7 dBm @ 693.0 MHz (Spec=+9dBm minimum).
Power at J5 is 12.1 dBm @ 696.0 MHz (Spec=+9dBm minimum).
Power at J5 is 12.6 dBm @ 699.0 MHz (Spec=+9dBm minimum).
Power at J5 is 12.9 dBm @ 702.0 MHz (Spec=+9dBm minimum).
Power at J5 is 13.4 dBm @ 705.0 MHz (Spec=+9dBm minimum).
Power at J5 is 13.5 dBm @ 708.0 MHz (Spec=+9dBm minimum).
Power at J5 is 13.6 dBm @ 711.0 MHz (Spec=+9dBm minimum).
Power at J5 is 13.4 dBm @ 714.0 MHz (Spec=+9dBm minimum).
Power at J5 is 13.4 dBm @ 717.0 MHz (Spec=+9dBm minimum).
Power at J5 is 13.5 dBm @ 720.0 MHz (Spec=+9dBm minimum).
Power at J5 is 13.6 dBm @ 723.0 MHz (Spec=+9dBm minimum).
Power at J5 is 13.8 dBm @ 726.0 MHz (Spec=+9dBm minimum).
Power at J5 is 14.0 dBm @ 729.0 MHz (Spec=+9dBm minimum).
Power at J5 is 14.1 dBm @ 732.0 MHz (Spec=+9dBm minimum).
Power at J5 is 14.2 dBm @ 735.0 MHz (Spec=+9dBm minimum).
Power at J5 is 14.2 dBm @ 738.0 MHz (Spec=+9dBm minimum).
Power at J5 is 14.0 dBm @ 741.0 MHz (Spec=+9dBm minimum).
Power at J5 is 13.8 dBm @ 744.0 MHz (Spec=+9dBm minimum).
Power at J5 is 13.7 dBm @ 747.0 MHz (Spec=+9dBm minimum).
Power at J5 is 13.7 dBm @ 750.0 MHz (Spec=+9dBm minimum).
Power at J5 is 13.8 dBm @ 753.0 MHz (Spec=+9dBm minimum).
Power at J5 is 13.7 dBm @ 756.0 MHz (Spec=+9dBm minimum).
Power at J5 is 14.0 dBm @ 759.0 MHz (Spec=+9dBm minimum).
Power at J5 is 14.1 dBm @ 762.0 MHz (Spec=+9dBm minimum).
Power at J5 is 14.1 dBm @ 765.0 MHz (Spec=+9dBm minimum).
Power at J5 is 14.0 dBm @ 768.0 MHz (Spec=+9dBm minimum).
Power at J5 is 14.0 dBm @ 771.0 MHz (Spec=+9dBm minimum).
Power at J5 is 13.7 dBm @ 774.0 MHz (Spec=+9dBm minimum).
Power at J5 is 13.7 dBm @ 777.0 MHz (Spec=+9dBm minimum).
Power at J5 is 14.1 dBm @ 825.0 MHz (Spec=+9dBm minimum).
Power at J5 is 14.0 dBm @ 828.0 MHz (Spec=+9dBm minimum).
Power at J5 is 14.1 dBm @ 831.0 MHz (Spec=+9dBm minimum).
Power at J5 is 14.1 dBm @ 834.0 MHz (Spec=+9dBm minimum).
Power at J5 is 14.1 dBm @ 837.0 MHz (Spec=+9dBm minimum).
Power at J5 is 13.4 dBm @ 882.0 MHz (Spec=+9dBm minimum).
Power at J5 is 13.3 dBm @ 885.0 MHz (Spec=+9dBm minimum).
Power at J5 is 13.4 dBm @ 888.0 MHz (Spec=+9dBm minimum).
Power at J5 is 13.3 dBm @ 891.0 MHz (Spec=+9dBm minimum).
Power at J5 is 13.3 dBm @ 894.0 MHz (Spec=+9dBm minimum).
Power at J5 is 13.2 dBm @ 897.0 MHz (Spec=+9dBm minimum).
Power at J5 is 13.1 dBm @ 900.0 MHz (Spec=+9dBm minimum).
Power at J5 is 13.0 dBm @ 903.0 MHz (Spec=+9dBm minimum).
Power at J5 is 13.0 dBm @ 906.0 MHz (Spec=+9dBm minimum).
Power at J5 is 12.9 dBm @ 909.0 MHz (Spec=+9dBm minimum).
Power at J5 is 12.8 dBm @ 912.0 MHz (Spec=+9dBm minimum).
Power at J5 is 12.6 dBm @ 915.0 MHz (Spec=+9dBm minimum).
Power at J5 is 12.7 dBm @ 918.0 MHz (Spec=+9dBm minimum).
Power at J5 is 12.6 dBm @ 921.0 MHz (Spec=+9dBm minimum).

FAIL DATA (if any) of Power Output requirements will be printed between the starred borders.

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FULL PRINT-OUT OF Power Output and Frequency [redacted] Ser. # -100/349

(GSG 92466 TEST) 11-24-91

Power at J4 is 5.5 dBm @ 684.0 MHz (Spec=0dBm minimum).

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UUT Precondition Room Temp.

Power at J4 is 5.7 dBm @ 687.0 MHz (Spec=0dBm minimum).
Power at J4 is 5.8 dBm @ 690.0 MHz (Spec=0dBm minimum).
Power at J4 is 5.9 dBm @ 693.0 MHz (Spec=0dBm minimum).
Power at J4 is 6.1 dBm @ 696.0 MHz (Spec=0dBm minimum).
Power at J4 is 6.4 dBm @ 699.0 MHz (Spec=0dBm minimum).
Power at J4 is 6.5 dBm @ 702.0 MHz (Spec=0dBm minimum).
Power at J4 is 6.6 dBm @ 705.0 MHz (Spec=0dBm minimum).
Power at J4 is 6.6 dBm @ 708.0 MHz (Spec=0dBm minimum).
Power at J4 is 6.5 dBm @ 711.0 MHz (Spec=0dBm minimum).
Power at J4 is 6.4 dBm @ 714.0 MHz (Spec=0dBm minimum).
Power at J4 is 6.4 dBm @ 717.0 MHz (Spec=0dBm minimum).
Power at J4 is 6.5 dBm @ 720.0 MHz (Spec=0dBm minimum).
Power at J4 is 6.5 dBm @ 723.0 MHz (Spec=0dBm minimum).
Power at J4 is 6.5 dBm @ 726.0 MHz (Spec=0dBm minimum).
Power at J4 is 6.7 dBm @ 729.0 MHz (Spec=0dBm minimum).
Power at J4 is 6.7 dBm @ 732.0 MHz (Spec=0dBm minimum).
Power at J4 is 6.9 dBm @ 735.0 MHz (Spec=0dBm minimum).
Power at J4 is 6.8 dBm @ 738.0 MHz (Spec=0dBm minimum).
Power at J4 is 6.8 dBm @ 741.0 MHz (Spec=0dBm minimum).
Power at J4 is 6.7 dBm @ 744.0 MHz (Spec=0dBm minimum).
Power at J4 is 6.6 dBm @ 747.0 MHz (Spec=0dBm minimum).
Power at J4 is 6.5 dBm @ 750.0 MHz (Spec=0dBm minimum).
Power at J4 is 6.5 dBm @ 753.0 MHz (Spec=0dBm minimum).
Power at J4 is 6.4 dBm @ 756.0 MHz (Spec=0dBm minimum).
Power at J4 is 6.5 dBm @ 759.0 MHz (Spec=0dBm minimum).
Power at J4 is 6.5 dBm @ 762.0 MHz (Spec=0dBm minimum).
Power at J4 is 6.5 dBm @ 765.0 MHz (Spec=0dBm minimum).
Power at J4 is 6.4 dBm @ 768.0 MHz (Spec=0dBm minimum).
Power at J4 is 6.5 dBm @ 771.0 MHz (Spec=0dBm minimum).
Power at J4 is 6.4 dBm @ 774.0 MHz (Spec=0dBm minimum).
Power at J4 is 6.3 dBm @ 777.0 MHz (Spec=0dBm minimum).
Power at J4 is 7.0 dBm @ 825.0 MHz (Spec=0dBm minimum).
Power at J4 is 7.0 dBm @ 828.0 MHz (Spec=0dBm minimum).
Power at J4 is 7.0 dBm @ 831.0 MHz (Spec=0dBm minimum).
Power at J4 is 7.0 dBm @ 834.0 MHz (Spec=0dBm minimum).
Power at J4 is 7.0 dBm @ 837.0 MHz (Spec=0dBm minimum).
Power at J4 is 6.8 dBm @ 882.0 MHz (Spec=0dBm minimum).
Power at J4 is 6.8 dBm @ 885.0 MHz (Spec=0dBm minimum).
Power at J4 is 6.8 dBm @ 888.0 MHz (Spec=0dBm minimum).
Power at J4 is 5.9 dBm @ 891.0 MHz (Spec=0dBm minimum).
Power at J4 is 5.9 dBm @ 894.0 MHz (Spec=0dBm minimum).
Power at J4 is 5.7 dBm @ 897.0 MHz (Spec=0dBm minimum).
Power at J4 is 5.7 dBm @ 900.0 MHz (Spec=0dBm minimum).
Power at J4 is 5.6 dBm @ 903.0 MHz (Spec=0dBm minimum).
Power at J4 is 5.5 dBm @ 906.0 MHz (Spec=0dBm minimum).
Power at J4 is 5.2 dBm @ 909.0 MHz (Spec=0dBm minimum).
Power at J4 is 4.9 dBm @ 912.0 MHz (Spec=0dBm minimum).
Power at J4 is 4.7 dBm @ 915.0 MHz (Spec=0dBm minimum).
Power at J4 is 4.5 dBm @ 918.0 MHz (Spec=0dBm minimum).
Power at J4 is 4.4 dBm @ 921.0 MHz (Spec=0dBm minimum).

FAIL DATA (if any) of Power Output requirements will be printed between the starred borders.

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FULL PRINT-OUT OF Power Output and Frequency [redacted] Ser. # -100/349

Power at J12 is 12.9 dBm @ 684.0 MHz (Spec=+9dBm minimum).
Power at J12 is 12.8 dBm @ 687.0 MHz (Spec=+9dBm minimum).
Power at J12 is 12.8 dBm @ 690.0 MHz (Spec=+9dBm minimum).
Power at J12 is 12.7 dBm @ 693.0 MHz (Spec=+9dBm minimum).
Power at J12 is 12.8 dBm @ 696.0 MHz (Spec=+9dBm minimum).
Power at J12 is 12.9 dBm @ 699.0 MHz (Spec=+9dBm minimum).
Power at J12 is 13.1 dBm @ 702.0 MHz (Spec=+9dBm minimum).
Power at J12 is 13.2 dBm @ 705.0 MHz (Spec=+9dBm minimum).
Power at J12 is 13.3 dBm @ 708.0 MHz (Spec=+9dBm minimum).

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UUT Precondition Room Te

Power at J12 is 13.3 dBm @ 711.0 MHz (Spec=+9dBm minimum).
Power at J12 is 13.2 dBm @ 714.0 MHz (Spec=+9dBm minimum).
Power at J12 is 13.3 dBm @ 717.0 MHz (Spec=+9dBm minimum).
Power at J12 is 13.5 dBm @ 720.0 MHz (Spec=+9dBm minimum).
Power at J12 is 13.7 dBm @ 723.0 MHz (Spec=+9dBm minimum).
Power at J12 is 13.8 dBm @ 726.0 MHz (Spec=+9dBm minimum).
Power at J12 is 13.9 dBm @ 729.0 MHz (Spec=+9dBm minimum).
Power at J12 is 13.8 dBm @ 732.0 MHz (Spec=+9dBm minimum).
Power at J12 is 13.9 dBm @ 735.0 MHz (Spec=+9dBm minimum).
Power at J12 is 13.8 dBm @ 738.0 MHz (Spec=+9dBm minimum).
Power at J12 is 13.7 dBm @ 741.0 MHz (Spec=+9dBm minimum).
Power at J12 is 13.6 dBm @ 744.0 MHz (Spec=+9dBm minimum).
Power at J12 is 13.6 dBm @ 747.0 MHz (Spec=+9dBm minimum).
Power at J12 is 13.7 dBm @ 750.0 MHz (Spec=+9dBm minimum).
Power at J12 is 13.8 dBm @ 753.0 MHz (Spec=+9dBm minimum).
Power at J12 is 13.9 dBm @ 756.0 MHz (Spec=+9dBm minimum).
Power at J12 is 14.3 dBm @ 759.0 MHz (Spec=+9dBm minimum).
Power at J12 is 14.5 dBm @ 762.0 MHz (Spec=+9dBm minimum).
Power at J12 is 14.6 dBm @ 765.0 MHz (Spec=+9dBm minimum).
Power at J12 is 14.7 dBm @ 768.0 MHz (Spec=+9dBm minimum).
Power at J12 is 14.8 dBm @ 771.0 MHz (Spec=+9dBm minimum).
Power at J12 is 14.8 dBm @ 774.0 MHz (Spec=+9dBm minimum).
Power at J12 is 14.8 dBm @ 777.0 MHz (Spec=+9dBm minimum).
Power at J12 is 14.1 dBm @ 825.0 MHz (Spec=+9dBm minimum).
Power at J12 is 14.1 dBm @ 828.0 MHz (Spec=+9dBm minimum).
Power at J12 is 14.0 dBm @ 831.0 MHz (Spec=+9dBm minimum).
Power at J12 is 14.0 dBm @ 834.0 MHz (Spec=+9dBm minimum).
Power at J12 is 14.0 dBm @ 837.0 MHz (Spec=+9dBm minimum).
Power at J12 is 13.0 dBm @ 882.0 MHz (Spec=+9dBm minimum).
Power at J12 is 12.9 dBm @ 885.0 MHz (Spec=+9dBm minimum).
Power at J12 is 13.0 dBm @ 888.0 MHz (Spec=+9dBm minimum).
Power at J12 is 12.9 dBm @ 891.0 MHz (Spec=+9dBm minimum).
Power at J12 is 13.0 dBm @ 894.0 MHz (Spec=+9dBm minimum).
Power at J12 is 13.0 dBm @ 897.0 MHz (Spec=+9dBm minimum).
Power at J12 is 12.9 dBm @ 900.0 MHz (Spec=+9dBm minimum).
Power at J12 is 12.9 dBm @ 903.0 MHz (Spec=+9dBm minimum).
Power at J12 is 12.9 dBm @ 906.0 MHz (Spec=+9dBm minimum).
Power at J12 is 12.8 dBm @ 909.0 MHz (Spec=+9dBm minimum).
Power at J12 is 12.6 dBm @ 912.0 MHz (Spec=+9dBm minimum).
Power at J12 is 12.5 dBm @ 915.0 MHz (Spec=+9dBm minimum).
Power at J12 is 12.4 dBm @ 918.0 MHz (Spec=+9dBm minimum).
Power at J12 is 12.2 dBm @ 921.0 MHz (Spec=+9dBm minimum).

FAIL DATA (if any) of Power Output requirements will be printed between the starred borders.

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FULL PRINT-OUT OF Power Output and Frequency [redacted] Ser. # -100/349

Power at J11 is 5.0 dBm @ 684.0 MHz (Spec=0dBm minimum).
Power at J11 is 5.0 dBm @ 687.0 MHz (Spec=0dBm minimum).
Power at J11 is 4.9 dBm @ 690.0 MHz (Spec=0dBm minimum).
Power at J11 is 4.8 dBm @ 693.0 MHz (Spec=0dBm minimum).
Power at J11 is 4.6 dBm @ 696.0 MHz (Spec=0dBm minimum).
Power at J11 is 4.6 dBm @ 699.0 MHz (Spec=0dBm minimum).
Power at J11 is 4.7 dBm @ 702.0 MHz (Spec=0dBm minimum).
Power at J11 is 4.8 dBm @ 705.0 MHz (Spec=0dBm minimum).
Power at J11 is 4.9 dBm @ 708.0 MHz (Spec=0dBm minimum).
Power at J11 is 5.0 dBm @ 711.0 MHz (Spec=0dBm minimum).
Power at J11 is 5.0 dBm @ 714.0 MHz (Spec=0dBm minimum).
Power at J11 is 5.1 dBm @ 717.0 MHz (Spec=0dBm minimum).
Power at J11 is 5.2 dBm @ 720.0 MHz (Spec=0dBm minimum).
Power at J11 is 5.2 dBm @ 723.0 MHz (Spec=0dBm minimum).
Power at J11 is 5.0 dBm @ 726.0 MHz (Spec=0dBm minimum).
Power at J11 is 5.1 dBm @ 729.0 MHz (Spec=0dBm minimum).
Power at J11 is 4.9 dBm @ 732.0 MHz (Spec=0dBm minimum).

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UUT Precondition Room temp.

Power at J11 is 4.8 dBm @ 735.0 MHz (Spec=0dBm minimum).
Power at J11 is 4.7 dBm @ 738.0 MHz (Spec=0dBm minimum).
Power at J11 is 4.5 dBm @ 741.0 MHz (Spec=0dBm minimum).
Power at J11 is 4.4 dBm @ 744.0 MHz (Spec=0dBm minimum).
Power at J11 is 4.4 dBm @ 747.0 MHz (Spec=0dBm minimum).
Power at J11 is 4.5 dBm @ 750.0 MHz (Spec=0dBm minimum).
Power at J11 is 4.6 dBm @ 753.0 MHz (Spec=0dBm minimum).
Power at J11 is 4.8 dBm @ 756.0 MHz (Spec=0dBm minimum).
Power at J11 is 5.2 dBm @ 759.0 MHz (Spec=0dBm minimum).
Power at J11 is 5.5 dBm @ 762.0 MHz (Spec=0dBm minimum).
Power at J11 is 5.8 dBm @ 765.0 MHz (Spec=0dBm minimum).
Power at J11 is 6.1 dBm @ 768.0 MHz (Spec=0dBm minimum).
Power at J11 is 6.4 dBm @ 771.0 MHz (Spec=0dBm minimum).
Power at J11 is 6.6 dBm @ 774.0 MHz (Spec=0dBm minimum).
Power at J11 is 6.7 dBm @ 777.0 MHz (Spec=0dBm minimum).
Power at J11 is 4.7 dBm @ 825.0 MHz (Spec=0dBm minimum).
Power at J11 is 4.6 dBm @ 828.0 MHz (Spec=0dBm minimum).
Power at J11 is 4.6 dBm @ 831.0 MHz (Spec=0dBm minimum).
Power at J11 is 4.6 dBm @ 834.0 MHz (Spec=0dBm minimum).
Power at J11 is 4.6 dBm @ 837.0 MHz (Spec=0dBm minimum).
Power at J11 is 3.8 dBm @ 882.0 MHz (Spec=0dBm minimum).
Power at J11 is 3.8 dBm @ 885.0 MHz (Spec=0dBm minimum).
Power at J11 is 3.9 dBm @ 888.0 MHz (Spec=0dBm minimum).
Power at J11 is 3.9 dBm @ 891.0 MHz (Spec=0dBm minimum).
Power at J11 is 4.0 dBm @ 894.0 MHz (Spec=0dBm minimum).
Power at J11 is 4.1 dBm @ 897.0 MHz (Spec=0dBm minimum).
Power at J11 is 4.2 dBm @ 900.0 MHz (Spec=0dBm minimum).
Power at J11 is 4.3 dBm @ 903.0 MHz (Spec=0dBm minimum).
Power at J11 is 4.3 dBm @ 906.0 MHz (Spec=0dBm minimum).
Power at J11 is 4.2 dBm @ 909.0 MHz (Spec=0dBm minimum).
Power at J11 is 4.1 dBm @ 912.0 MHz (Spec=0dBm minimum).
Power at J11 is 3.8 dBm @ 915.0 MHz (Spec=0dBm minimum).
Power at J11 is 3.6 dBm @ 918.0 MHz (Spec=0dBm minimum).
Power at J11 is 3.3 dBm @ 921.0 MHz (Spec=0dBm minimum).

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J5 TEST #6 PASSED (GSE 92466 TEST) 11/24/91

The 1/2 harmonic level of the 921 MHz signal is greater than 60 dB below the Carrier as required at 83 dB

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J5 PASSED

The 3/2 harmonic level of the 921 MHz signal is greater than 30 dB below the Carrier as required at 77.9 dB

****

J5 PASSED

The 1/2 harmonic level of the 684 MHz signal is greater than 60 dB below the Carrier as required at 83 dB

****

J5 PASSED

The 3/2 harmonic level of the 684 MHz signal is greater than 30 dB below the Carrier as required at 37.5 dB

****

J12 PASSED

The 1/2 harmonic level of the 921 MHz signal is greater than 60 dB below the Carrier as required at 82.8 dB

****

J12 PASSED

The 3/2 harmonic level of the 921 MHz signal is greater than 30 dB below the Carrier as required at 79.5 dB

****

PASSED

J12

The 1/2 harmonic level of the 684 MHz signal is greater than 60 dB below the Carrier as required at 84.5 dB

****

PASSED

J12

The 3/2 harmonic level of the 684 MHz signal is greater than 30 dB below the Carrier as required at 39.9 dB
FAIL DATA (if any) of 1/2 Harmonics will be printed between the starred borders.

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(GSE 92466 TEST) 11/24/91

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TEST #7
FULL PRINT-OUT OF 1/2 HARMONIC LEVELS [redacted] SER.# -100/349

J4

1/2 Harm. level of 921.0 MHz =-16.4 dBc at 460.4 MHz..Spec limit= -6dBc
1/2 Harm. level of 918.0 MHz =-16.4 dBc at 458.9 MHz..Spec limit= -6dBc
1/2 Harm. level of 915.0 MHz =-16.6 dBc at 457.4 MHz..Spec limit= -6dBc
1/2 Harm. level of 912.0 MHz =-16.8 dBc at 455.9 MHz..Spec limit= -6dBc
1/2 Harm. level of 909.0 MHz =-17.0 dBc at 454.4 MHz..Spec limit= -6dBc
1/2 Harm. level of 906.0 MHz =-17.1 dBc at 452.9 MHz..Spec limit= -6dBc
1/2 Harm. level of 903.0 MHz =-17.3 dBc at 451.4 MHz..Spec limit= -6dBc
1/2 Harm. level of 900.0 MHz =-17.7 dBc at 449.9 MHz..Spec limit= -6dBc
1/2 Harm. level of 897.0 MHz =-17.8 dBc at 448.4 MHz..Spec limit= -6dBc
1/2 Harm. level of 894.0 MHz =-18.2 dBc at 446.9 MHz..Spec limit= -6dBc
1/2 Harm. level of 891.0 MHz =-18.4 dBc at 445.4 MHz..Spec limit= -6dBc
1/2 Harm. level of 888.0 MHz =-18.6 dBc at 443.9 MHz..Spec limit= -6dBc
1/2 Harm. level of 885.0 MHz =-18.9 dBc at 442.4 MHz..Spec limit= -6dBc
1/2 Harm. level of 882.0 MHz =-19.0 dBc at 441.0 MHz..Spec limit= -6dBc
1/2 Harm. level of 837.0 MHz =-20.3 dBc at 418.4 MHz..Spec limit= -6dBc
1/2 Harm. level of 834.0 MHz =-20.5 dBc at 416.9 MHz..Spec limit= -6dBc
1/2 Harm. level of 831.0 MHz =-20.3 dBc at 415.4 MHz..Spec limit= -6dBc
1/2 Harm. level of 828.0 MHz =-20.2 dBc at 414.0 MHz..Spec limit= -6dBc
1/2 Harm. level of 825.0 MHz =-20.2 dBc at 412.4 MHz..Spec limit= -6dBc
1/2 Harm. level of 777.0 MHz =-18.9 dBc at 388.4 MHz..Spec limit= -6dBc
1/2 Harm. level of 774.0 MHz =-18.9 dBc at 387.0 MHz..Spec limit= -6dBc
1/2 Harm. level of 771.0 MHz =-18.8 dBc at 385.5 MHz..Spec limit= -6dBc
1/2 Harm. level of 768.0 MHz =-18.9 dBc at 383.9 MHz..Spec limit= -6dBc
1/2 Harm. level of 765.0 MHz =-19.0 dBc at 382.4 MHz..Spec limit= -6dBc
1/2 Harm. level of 762.0 MHz =-19.0 dBc at 380.9 MHz..Spec limit= -6dBc
1/2 Harm. level of 759.0 MHz =-19.0 dBc at 379.5 MHz..Spec limit= -6dBc
1/2 Harm. level of 756.0 MHz =-19.2 dBc at 377.9 MHz..Spec limit= -6dBc
1/2 Harm. level of 753.0 MHz =-19.2 dBc at 376.4 MHz..Spec limit= -6dBc
1/2 Harm. level of 750.0 MHz =-19.2 dBc at 374.9 MHz..Spec limit= -6dBc
1/2 Harm. level of 747.0 MHz =-19.2 dBc at 373.5 MHz..Spec limit= -6dBc
1/2 Harm. level of 744.0 MHz =-19.1 dBc at 371.9 MHz..Spec limit= -6dBc
1/2 Harm. level of 741.0 MHz =-18.8 dBc at 370.4 MHz..Spec limit= -6dBc
1/2 Harm. level of 738.0 MHz =-18.5 dBc at 369.0 MHz..Spec limit= -6dBc
1/2 Harm. level of 735.0 MHz =-18.1 dBc at 367.4 MHz..Spec limit= -6dBc
1/2 Harm. level of 732.0 MHz =-17.7 dBc at 365.9 MHz..Spec limit= -6dBc
1/2 Harm. level of 729.0 MHz =-17.2 dBc at 364.4 MHz..Spec limit= -6dBc
1/2 Harm. level of 726.0 MHz =-16.6 dBc at 362.9 MHz..Spec limit= -6dBc
1/2 Harm. level of 723.0 MHz =-15.9 dBc at 361.4 MHz..Spec limit= -6dBc
1/2 Harm. level of 720.0 MHz =-15.4 dBc at 360.0 MHz..Spec limit= -6dBc
1/2 Harm. level of 717.0 MHz =-14.6 dBc at 358.4 MHz..Spec limit= -6dBc
1/2 Harm. level of 714.0 MHz =-14.0 dBc at 356.9 MHz..Spec limit= -6dBc
1/2 Harm. level of 711.0 MHz =-13.3 dBc at 355.4 MHz..Spec limit= -6dBc
1/2 Harm. level of 708.0 MHz =-12.6 dBc at 353.9 MHz..Spec limit= -6dBc
1/2 Harm. level of 705.0 MHz =-11.9 dBc at 352.4 MHz..Spec limit= -6dBc
1/2 Harm. level of 702.0 MHz =-11.3 dBc at 350.9 MHz..Spec limit= -6dBc
1/2 Harm. level of 699.0 MHz =-10.8 dBc at 349.5 MHz..Spec limit= -6dBc
1/2 Harm. level of 696.0 MHz =-10.6 dBc at 347.9 MHz..Spec limit= -6dBc
1/2 Harm. level of 693.0 MHz =-10.7 dBc at 346.4 MHz..Spec limit= -6dBc
1/2 Harm. level of 690.0 MHz =-10.7 dBc at 344.9 MHz..Spec limit= -6dBc
1/2 Harm. level of 687.0 MHz =-10.5 dBc at 343.4 MHz..Spec limit= -6dBc

UUT Precondition Room Temp

1/2 Harm. level of 684.0 MHz =-10.5 dBc at 341.9 MHz..Spec limit= -6dBc
FAIL DATA (if any) of 3/2 Harmonics will be printed between the starred borders.

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FULL PRINT-OUT OF 3/2 HARMONIC LEVELS [redacted] SER.# -100/349

J4

3/2 Harm. level of 921.0 MHz =-14.8 dBc at 1381.4 MHz..Spec limit= -6dBc
3/2 Harm. level of 918.0 MHz =-15.1 dBc at 1376.9 MHz..Spec limit= -6dBc
3/2 Harm. level of 915.0 MHz =-15.3 dBc at 1372.4 MHz..Spec limit= -6dBc
3/2 Harm. level of 912.0 MHz =-15.7 dBc at 1367.9 MHz..Spec limit= -6dBc
3/2 Harm. level of 909.0 MHz =-15.9 dBc at 1363.4 MHz..Spec limit= -6dBc
3/2 Harm. level of 906.0 MHz =-16.1 dBc at 1358.9 MHz..Spec limit= -6dBc
3/2 Harm. level of 903.0 MHz =-15.9 dBc at 1354.4 MHz..Spec limit= -6dBc
3/2 Harm. level of 900.0 MHz =-16.2 dBc at 1350.0 MHz..Spec limit= -6dBc
3/2 Harm. level of 897.0 MHz =-16.3 dBc at 1345.5 MHz..Spec limit= -6dBc
3/2 Harm. level of 894.0 MHz =-16.4 dBc at 1340.9 MHz..Spec limit= -6dBc
3/2 Harm. level of 891.0 MHz =-16.7 dBc at 1336.4 MHz..Spec limit= -6dBc
3/2 Harm. level of 888.0 MHz =-17.1 dBc at 1331.9 MHz..Spec limit= -6dBc
3/2 Harm. level of 885.0 MHz =-17.5 dBc at 1327.4 MHz..Spec limit= -6dBc
3/2 Harm. level of 882.0 MHz =-17.9 dBc at 1322.9 MHz..Spec limit= -6dBc
3/2 Harm. level of 837.0 MHz =-24.7 dBc at 1255.4 MHz..Spec limit= -6dBc
3/2 Harm. level of 834.0 MHz =-25.1 dBc at 1250.9 MHz..Spec limit= -6dBc
3/2 Harm. level of 831.0 MHz =-25.6 dBc at 1246.4 MHz..Spec limit= -6dBc
3/2 Harm. level of 828.0 MHz =-25.8 dBc at 1241.9 MHz..Spec limit= -6dBc
3/2 Harm. level of 825.0 MHz =-26.3 dBc at 1237.5 MHz..Spec limit= -6dBc
3/2 Harm. level of 777.0 MHz =-24.2 dBc at 1165.4 MHz..Spec limit= -6dBc
3/2 Harm. level of 774.0 MHz =-23.9 dBc at 1160.9 MHz..Spec limit= -6dBc
3/2 Harm. level of 771.0 MHz =-23.5 dBc at 1156.5 MHz..Spec limit= -6dBc
3/2 Harm. level of 768.0 MHz =-23.2 dBc at 1151.9 MHz..Spec limit= -6dBc
3/2 Harm. level of 765.0 MHz =-22.7 dBc at 1147.4 MHz..Spec limit= -6dBc
3/2 Harm. level of 762.0 MHz =-22.6 dBc at 1142.9 MHz..Spec limit= -6dBc
3/2 Harm. level of 759.0 MHz =-22.1 dBc at 1138.4 MHz..Spec limit= -6dBc
3/2 Harm. level of 756.0 MHz =-21.6 dBc at 1133.9 MHz..Spec limit= -6dBc
3/2 Harm. level of 753.0 MHz =-21.4 dBc at 1129.4 MHz..Spec limit= -6dBc
3/2 Harm. level of 750.0 MHz =-21.1 dBc at 1124.9 MHz..Spec limit= -6dBc
3/2 Harm. level of 747.0 MHz =-20.7 dBc at 1120.4 MHz..Spec limit= -6dBc
3/2 Harm. level of 744.0 MHz =-20.3 dBc at 1115.9 MHz..Spec limit= -6dBc
3/2 Harm. level of 741.0 MHz =-20.2 dBc at 1111.4 MHz..Spec limit= -6dBc
3/2 Harm. level of 738.0 MHz =-20.0 dBc at 1106.9 MHz..Spec limit= -6dBc
3/2 Harm. level of 735.0 MHz =-20.0 dBc at 1102.4 MHz..Spec limit= -6dBc
3/2 Harm. level of 732.0 MHz =-20.1 dBc at 1097.9 MHz..Spec limit= -6dBc
3/2 Harm. level of 729.0 MHz =-20.2 dBc at 1093.4 MHz..Spec limit= -6dBc
3/2 Harm. level of 726.0 MHz =-20.2 dBc at 1089.0 MHz..Spec limit= -6dBc
3/2 Harm. level of 723.0 MHz =-20.2 dBc at 1084.4 MHz..Spec limit= -6dBc
3/2 Harm. level of 720.0 MHz =-20.3 dBc at 1079.9 MHz..Spec limit= -6dBc
3/2 Harm. level of 717.0 MHz =-20.2 dBc at 1075.5 MHz..Spec limit= -6dBc
3/2 Harm. level of 714.0 MHz =-20.4 dBc at 1071.0 MHz..Spec limit= -6dBc
3/2 Harm. level of 711.0 MHz =-20.6 dBc at 1066.4 MHz..Spec limit= -6dBc
3/2 Harm. level of 708.0 MHz =-21.0 dBc at 1061.9 MHz..Spec limit= -6dBc
3/2 Harm. level of 705.0 MHz =-21.5 dBc at 1057.4 MHz..Spec limit= -6dBc
3/2 Harm. level of 702.0 MHz =-22.2 dBc at 1052.9 MHz..Spec limit= -6dBc
3/2 Harm. level of 699.0 MHz =-22.3 dBc at 1048.4 MHz..Spec limit= -6dBc
3/2 Harm. level of 696.0 MHz =-21.4 dBc at 1043.9 MHz..Spec limit= -6dBc
3/2 Harm. level of 693.0 MHz =-18.9 dBc at 1039.4 MHz..Spec limit= -6dBc
3/2 Harm. level of 690.0 MHz =-16.3 dBc at 1034.9 MHz..Spec limit= -6dBc
3/2 Harm. level of 687.0 MHz =-14.1 dBc at 1030.4 MHz..Spec limit= -6dBc
3/2 Harm. level of 684.0 MHz =-12.4 dBc at 1025.9 MHz..Spec limit= -6dBc
FAIL DATA (if any) of 1/2 Harmonics will be printed between the starred borders.

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UUT Precondition Room Temp

FULL PRINT-OUT OF 1/2 HARMONIC LEVELS [redacted] SER.# -100/349

J11

1/2 Harm. level of 921.0 MHz =-11.0 dBc at 460.4 MHz..Spec limit= -6dBc
1/2 Harm. level of 918.0 MHz =-11.1 dBc at 459.0 MHz..Spec limit= -6dBc
1/2 Harm. level of 915.0 MHz =-11.4 dBc at 457.4 MHz..Spec limit= -6dBc
1/2 Harm. level of 912.0 MHz =-11.8 dBc at 455.9 MHz..Spec limit= -6dBc
1/2 Harm. level of 909.0 MHz =-11.9 dBc at 454.4 MHz..Spec limit= -6dBc
1/2 Harm. level of 906.0 MHz =-12.2 dBc at 452.9 MHz..Spec limit= -6dBc
1/2 Harm. level of 903.0 MHz =-12.5 dBc at 451.5 MHz..Spec limit= -6dBc
1/2 Harm. level of 900.0 MHz =-12.7 dBc at 450.0 MHz..Spec limit= -6dBc
1/2 Harm. level of 897.0 MHz =-12.9 dBc at 448.4 MHz..Spec limit= -6dBc
1/2 Harm. level of 894.0 MHz =-13.0 dBc at 446.9 MHz..Spec limit= -6dBc
1/2 Harm. level of 891.0 MHz =-13.2 dBc at 445.4 MHz..Spec limit= -6dBc
1/2 Harm. level of 888.0 MHz =-13.2 dBc at 444.0 MHz..Spec limit= -6dBc
1/2 Harm. level of 885.0 MHz =-13.3 dBc at 442.5 MHz..Spec limit= -6dBc
1/2 Harm. level of 882.0 MHz =-13.3 dBc at 440.9 MHz..Spec limit= -6dBc
1/2 Harm. level of 837.0 MHz =-17.2 dBc at 418.4 MHz..Spec limit= -6dBc
1/2 Harm. level of 834.0 MHz =-17.3 dBc at 417.0 MHz..Spec limit= -6dBc
1/2 Harm. level of 831.0 MHz =-17.3 dBc at 415.5 MHz..Spec limit= -6dBc
1/2 Harm. level of 828.0 MHz =-17.4 dBc at 413.9 MHz..Spec limit= -6dBc
1/2 Harm. level of 825.0 MHz =-17.5 dBc at 412.4 MHz..Spec limit= -6dBc
1/2 Harm. level of 777.0 MHz =-23.0 dBc at 388.4 MHz..Spec limit= -6dBc
1/2 Harm. level of 774.0 MHz =-23.4 dBc at 387.0 MHz..Spec limit= -6dBc
1/2 Harm. level of 771.0 MHz =-23.6 dBc at 385.4 MHz..Spec limit= -6dBc
1/2 Harm. level of 768.0 MHz =-24.1 dBc at 383.9 MHz..Spec limit= -6dBc
1/2 Harm. level of 765.0 MHz =-24.9 dBc at 382.4 MHz..Spec limit= -6dBc
1/2 Harm. level of 762.0 MHz =-25.8 dBc at 380.9 MHz..Spec limit= -6dBc
1/2 Harm. level of 759.0 MHz =-26.8 dBc at 379.4 MHz..Spec limit= -6dBc
1/2 Harm. level of 756.0 MHz =-27.8 dBc at 377.9 MHz..Spec limit= -6dBc
1/2 Harm. level of 753.0 MHz =-27.5 dBc at 376.5 MHz..Spec limit= -6dBc
1/2 Harm. level of 750.0 MHz =-25.9 dBc at 374.9 MHz..Spec limit= -6dBc
1/2 Harm. level of 747.0 MHz =-23.4 dBc at 373.4 MHz..Spec limit= -6dBc
1/2 Harm. level of 744.0 MHz =-21.0 dBc at 372.0 MHz..Spec limit= -6dBc
1/2 Harm. level of 741.0 MHz =-18.9 dBc at 370.4 MHz..Spec limit= -6dBc
1/2 Harm. level of 738.0 MHz =-17.2 dBc at 368.9 MHz..Spec limit= -6dBc
1/2 Harm. level of 735.0 MHz =-15.9 dBc at 367.5 MHz..Spec limit= -6dBc
1/2 Harm. level of 732.0 MHz =-15.1 dBc at 365.9 MHz..Spec limit= -6dBc
1/2 Harm. level of 729.0 MHz =-14.5 dBc at 364.4 MHz..Spec limit= -6dBc
1/2 Harm. level of 726.0 MHz =-14.1 dBc at 362.9 MHz..Spec limit= -6dBc
1/2 Harm. level of 723.0 MHz =-13.7 dBc at 361.5 MHz..Spec limit= -6dBc
1/2 Harm. level of 720.0 MHz =-13.6 dBc at 359.9 MHz..Spec limit= -6dBc
1/2 Harm. level of 717.0 MHz =-13.4 dBc at 358.4 MHz..Spec limit= -6dBc
1/2 Harm. level of 714.0 MHz =-13.2 dBc at 357.0 MHz..Spec limit= -6dBc
1/2 Harm. level of 711.0 MHz =-13.3 dBc at 355.4 MHz..Spec limit= -6dBc
1/2 Harm. level of 708.0 MHz =-13.2 dBc at 353.9 MHz..Spec limit= -6dBc
1/2 Harm. level of 705.0 MHz =-13.1 dBc at 352.4 MHz..Spec limit= -6dBc
1/2 Harm. level of 702.0 MHz =-13.3 dBc at 350.9 MHz..Spec limit= -6dBc
1/2 Harm. level of 699.0 MHz =-13.6 dBc at 349.4 MHz..Spec limit= -6dBc
1/2 Harm. level of 696.0 MHz =-14.1 dBc at 348.0 MHz..Spec limit= -6dBc
1/2 Harm. level of 693.0 MHz =-14.7 dBc at 346.4 MHz..Spec limit= -6dBc
1/2 Harm. level of 690.0 MHz =-15.2 dBc at 344.9 MHz..Spec limit= -6dBc
1/2 Harm. level of 687.0 MHz =-15.4 dBc at 343.4 MHz..Spec limit= -6dBc
1/2 Harm. level of 684.0 MHz =-15.2 dBc at 341.9 MHz..Spec limit= -6dBc
FAIL DATA (if any) of 3/2 Harmonics will be printed between the starred borders.

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FULL PRINT-OUT OF 3/2 HARMONIC LEVELS [redacted] SER.# -100/349

J11

3/2 Harm. level of 921.0 MHz =-15.5 dBc at 1381.4 MHz..Spec limit= -6dBc
3/2 Harm. level of 918.0 MHz =-15.9 dBc at 1376.9 MHz..Spec limit= -6dBc
3/2 Harm. level of 915.0 MHz =-16.1 dBc at 1372.4 MHz..Spec limit= -6dBc
3/2 Harm. level of 912.0 MHz =-16.3 dBc at 1367.9 MHz..Spec limit= -6dBc
3/2 Harm. level of 909.0 MHz =-16.1 dBc at 1363.4 MHz..Spec limit= -6dBc

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UUT Precondition Room Temp.

3/2 Harm. level of 906.0 MHz =-15.8 dBc at 1358.9 MHz..Spec limit= -6dBc
3/2 Harm. level of 903.0 MHz =-15.5 dBc at 1354.5 MHz..Spec limit= -6dBc
3/2 Harm. level of 900.0 MHz =-15.2 dBc at 1349.9 MHz..Spec limit= -6dBc
3/2 Harm. level of 897.0 MHz =-14.6 dBc at 1345.5 MHz..Spec limit= -6dBc
3/2 Harm. level of 894.0 MHz =-14.5 dBc at 1340.9 MHz..Spec limit= -6dBc
3/2 Harm. level of 891.0 MHz =-14.5 dBc at 1336.4 MHz..Spec limit= -6dBc
3/2 Harm. level of 888.0 MHz =-14.7 dBc at 1331.9 MHz..Spec limit= -6dBc
3/2 Harm. level of 885.0 MHz =-15.0 dBc at 1327.4 MHz..Spec limit= -6dBc
3/2 Harm. level of 882.0 MHz =-15.4 dBc at 1323.0 MHz..Spec limit= -6dBc
3/2 Harm. level of 837.0 MHz =-20.9 dBc at 1255.4 MHz..Spec limit= -6dBc
3/2 Harm. level of 834.0 MHz =-21.3 dBc at 1250.9 MHz..Spec limit= -6dBc
3/2 Harm. level of 831.0 MHz =-21.7 dBc at 1246.4 MHz..Spec limit= -6dBc
3/2 Harm. level of 828.0 MHz =-22.4 dBc at 1241.9 MHz..Spec limit= -6dBc
3/2 Harm. level of 825.0 MHz =-22.7 dBc at 1237.5 MHz..Spec limit= -6dBc
3/2 Harm. level of 777.0 MHz =-36.1 dBc at 1165.4 MHz..Spec limit= -6dBc
3/2 Harm. level of 774.0 MHz =-37.3 dBc at 1160.9 MHz..Spec limit= -6dBc
3/2 Harm. level of 771.0 MHz =-38.3 dBc at 1156.4 MHz..Spec limit= -6dBc
3/2 Harm. level of 768.0 MHz =-39.8 dBc at 1152.0 MHz..Spec limit= -6dBc
3/2 Harm. level of 765.0 MHz =-41.5 dBc at 1147.4 MHz..Spec limit= -6dBc
3/2 Harm. level of 762.0 MHz =-43.4 dBc at 1143.0 MHz..Spec limit= -6dBc
3/2 Harm. level of 759.0 MHz =-44.9 dBc at 1138.4 MHz..Spec limit= -6dBc
3/2 Harm. level of 756.0 MHz =-46.4 dBc at 1134.0 MHz..Spec limit= -6dBc
3/2 Harm. level of 753.0 MHz =-47.3 dBc at 1129.4 MHz..Spec limit= -6dBc
3/2 Harm. level of 750.0 MHz =-47.3 dBc at 1124.9 MHz..Spec limit= -6dBc
3/2 Harm. level of 747.0 MHz =-46.2 dBc at 1120.4 MHz..Spec limit= -6dBc
3/2 Harm. level of 744.0 MHz =-44.1 dBc at 1115.9 MHz..Spec limit= -6dBc
3/2 Harm. level of 741.0 MHz =-41.7 dBc at 1111.4 MHz..Spec limit= -6dBc
3/2 Harm. level of 738.0 MHz =-39.6 dBc at 1106.9 MHz..Spec limit= -6dBc
3/2 Harm. level of 735.0 MHz =-37.2 dBc at 1102.4 MHz..Spec limit= -6dBc
3/2 Harm. level of 732.0 MHz =-35.4 dBc at 1097.9 MHz..Spec limit= -6dBc
3/2 Harm. level of 729.0 MHz =-33.6 dBc at 1093.4 MHz..Spec limit= -6dBc
3/2 Harm. level of 726.0 MHz =-32.2 dBc at 1088.9 MHz..Spec limit= -6dBc
3/2 Harm. level of 723.0 MHz =-30.6 dBc at 1084.4 MHz..Spec limit= -6dBc
3/2 Harm. level of 720.0 MHz =-29.1 dBc at 1080.0 MHz..Spec limit= -6dBc
3/2 Harm. level of 717.0 MHz =-27.5 dBc at 1075.4 MHz..Spec limit= -6dBc
3/2 Harm. level of 714.0 MHz =-25.9 dBc at 1071.0 MHz..Spec limit= -6dBc
3/2 Harm. level of 711.0 MHz =-24.0 dBc at 1066.4 MHz..Spec limit= -6dBc
3/2 Harm. level of 708.0 MHz =-22.3 dBc at 1061.9 MHz..Spec limit= -6dBc
3/2 Harm. level of 705.0 MHz =-20.8 dBc at 1057.4 MHz..Spec limit= -6dBc
3/2 Harm. level of 702.0 MHz =-19.4 dBc at 1052.9 MHz..Spec limit= -6dBc
3/2 Harm. level of 699.0 MHz =-18.5 dBc at 1048.4 MHz..Spec limit= -6dBc
3/2 Harm. level of 696.0 MHz =-17.9 dBc at 1044.0 MHz..Spec limit= -6dBc
3/2 Harm. level of 693.0 MHz =-17.4 dBc at 1039.4 MHz..Spec limit= -6dBc
3/2 Harm. level of 690.0 MHz =-16.7 dBc at 1034.9 MHz..Spec limit= -6dBc
3/2 Harm. level of 687.0 MHz =-15.8 dBc at 1030.5 MHz..Spec limit= -6dBc
3/2 Harm. level of 684.0 MHz =-14.7 dBc at 1026.0 MHz..Spec limit= -6dBc

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TEST # 3 : Synthesizer 1.5MHz Sideband Clock

	J4	J11
f_c +1.5 MHz	51.9 dBc	50.7 dBc
3.0	51.8	45.0
4.5	55.0	52.8
6.0	62.1	57.0
7.5	65.1	68.2
9.0	70.7	68.4
10.5	72.5	66.7
20+	83.4 max.	76.0 max.

696 32466 TEST
11/24/91

HRT# 277804
UNIT READY FOR TRIAL TEST

TEST EQUIPMENT & CALIBRATION LOG

Maintain Log for testing conducted 11-25-91 (date) through 11-27-91 (date):

Item	DESCRIPTION	Manuf. & Part No.	ID NUMBER	LAST CAL*	CAL* DUE	Item Notes
01	T/R Test Station	HAC; SPECIAL	G-132043		NCR	F-A15223
02	Control Panel	HAC; SPECIAL	G-132290		NCR	
03	Signal Generator	HP; 8660C	G-128061	12-03-90	12-19-91	
04	Auxiliary Section	HP; 86631B	G-128062		NCR	P/o Item 03
05	RF Section	HP; 86603A	G-128063	12-03-90	12-19-91	P/o Item 03
06	Spectrum Analyzer	HP; 8568A w/ Opt E16	———			Sub Item 29
07	FET Probe	HP; 1120A	G-132055	12-14-90	04-30-92	
08	Power Meter	HP; 436A	G-128036	06-18-91	11-24-92	
09	Power Sensor	HP; 8482A	G-128059	09-09-91	10-21-92	
10	Oscilloscope	HP; 1980B	G-132049	09-24-91	08-11-92	
11	Digital Multimeter	SystronDonner; 7344A	G-127998	06-06-91	08-18-92	
12	Digital Multimeter	HP; 3478A	H-A53624	09-06-91	06-25-92	
13	Power Splitter	MiniCkts; ZFSC-2-5	NONE		NCR	
14	Power Splitter	MiniCkts; ZFSC-2-5	NONE		NCR	
15	Reg. Power Supply	Lambda; LP-531-FM	G-132292		NCR	+15 V Supply
16	Reg. Power Supply	Lambda; LP-531-FM	P/o Item 15		NCR	-15V Supply
17	Reg. Power Supply	Lambda; LP-530-FM	G-132291		NCR	+5 V Supply
18	Reg. Power Supply	Lambda; LP-520-FM	P/o Item 17		NCR	-5 V Supply
19	Computer	HP; 9845B	G-128030		NCR	
20	Flex. Disk Memory	HP; 9895A	G-133309		NCR	
21	Signal Generator		———			Not Used
22	Oscilloscope	Tektronix; 2465	———			Not Used
23	Digital Multimeter	Fluke; 8050A	E-A41119	07-10-91	09-21-92	
24	Digital Multimeter		———			Not Used
25	Digital Multimeter		———			Not Used
26	Thermal Chamber	Thermotron; S-4 w/Cntl	H-B07567	09-18-91	09-02-92	
27	Data Acqtn Cntl Unit	HP; 3497A	H-428499	11-14-91	07-29-93	
28	Computer	HP; Model 85	G-595184		NCR	
29	Spectrum Analyzer	HP; 8568B	H-374666	08-08-91	05-29-92	Sub Item 06
30	Printer	HP; Thinkjet	H-A51399		NCR	
31	Plotter	HP; 7470A	H-512478		NCR	
32	Attenuator; 1dB	Midwest Microwave; 238	None		NCR	} P/o 2dB pad
33	Attenuator; 1dB	Midwest Microwave; 294	NONE		NCR	
34	Power Supply	HP; 6299A	H-357054		NCR	-5 V Aux/Det.
35	Thermocouple Wire	Copper/Constantan; Type T	NONE		Prior to test	as Required
36						
37						
38						
39						
40						
41						
42						

*NCR = No Calibration Required

Stanley D. Mueller CSG 92466 TEST

DATE: [redacted] TIME: [redacted] PM

11/25/91 (SSE 92466 TEST) 23:28 A D Mueller

Synth_ref= 1499990
Freq_mod_ref= 9999980
Sp_clock_output = 0
Phase_lo_output = -.33
Phase_if_output = 0
Up_dn_conv_lo = 1.77
313.75_lo = 15.8 dBm /313.75173E6MHz

TRIAL TEST RUN - STRESS TEST
STATION AUTO CALIBRATION DATA
(MSN -100/349)

Channel	Freq	Dn_conv_output	Synth_lo_output	Hit_sgnl_i_o
50	684	-.01	-.32	.49
49	687	0	-.27	.33
48	690	.06	-.21	.16
47	693	.14	-.2	.09
46	696	.27	-.24	.11
45	699	.39	-.32	.1
44	702	.53	-.42	.04
43	705	.58	-.46	0
42	708	.58	-.42	-.08
41	711	.51	-.37	-.14
40	714	.49	-.32	-.15
39	717	.46	-.32	-.08
38	720	.41	-.3	-.06
37	723	.39	-.3	-.06
36	726	.31	-.26	-.15
35	729	.26	-.2	-.27
34	732	.19	-.09	-.37
33	735	.16	-.06	-.37
32	738	.16	-.08	-.31
31	741	.19	-.19	-.22
30	744	.15	-.26	-.18
29	747	.11	-.27	-.16
28	750	.08	-.18	-.2
27	753	.05	-.06	-.27
26	756	.04	.05	-.3
25	759	.07	.15	-.28
24	762	.14	.14	-.2
23	765	.19	.07	-.16
22	768	.21	.05	-.16
21	771	.21	.06	-.22
20	774	.23	.1	-.24
19	777	.2	.14	-.25
18	825	-.09	.44	-.09
17	828	-.1	.42	-.04
16	831	-.12	.42	-.06
15	834	-.11	.44	-.13
14	837	-.09	.44	-.17
13	882	-.11	.32	-.17
12	885	-.1	.32	-.13
11	888	-.15	.38	-.05
10	891	-.16	.41	-.02
9	894	-.17	.38	.01
8	897	-.13	.36	-.04
7	900	-.04	.32	-.15
6	903	0	.3	-.24
5	906	0	.31	-.2
4	909	-.07	.3	-.11
3	912	-.13	.22	-.02
2	915	-.17	.13	.03
1	918	-.23	.07	.03
0	921	-.25	.05	-.06

STEP-STRESS TEST DATA SHEET

UUT Serial Number (enter MSN): -100/349 Test Date: 11-26-91

Tester: (Name & stamp below)

STEP-STRESS Level (enter 0 - 10): 0

A.D. Mueller GSG 92466 TEST

START DAY 2

STEP-STRESS LEVEL DATA

TEMPERATURE STEP-STRESS: Ramp Chamber Temperature to STEP-STRESS Level; Stabilize, and Start Dwell at STEP-STRESS Level.

Begin RAMP: 20:10 (TIME HR:MIN) (Stabilize for 00:45 including Ramp) Start DWELL: 20:55 (TIME HR:MIN)

STEP-STRESS Level Chamber Air Temperature: +60.3 (°C) (Chamber thermocouple reading) Set @ +61 °C

Flange Temperature: +65.6 (°C) (Thermocouple reading)

STEP-STRESS Level Component Temperature: +70.4 (°C) +1.1°c/-1.9°c. (refer to Appendix D Table)

VOLTAGE STEP-STRESS: During Temperature Ramp; Increment Voltage to STEP-STRESS Level. (Record settings below)

Supply Voltages: +5 Volts dc: +5.00 (Vdc) -5 Volts dc: -5.00 (Vdc)

+15 Volts dc: +15.00 (Vdc) -15 Volts dc: -15.00 (Vdc)

Aux. Constant - 5 Volts dc Setting: -5.097 (Vdc) A4-R44 VR1 removed

UUT PERFORMANCE TEST DATA TESTS MAY BE PERFORMED IN ANY ORDER

UUT CURRENT TEST: At Dwell; Set UUT Frequency Word, Synthesized Signal, & Received (0 dBm) Signal Inputs for Channel 00. Record UUT Currents for this STEP-STRESS Level.

Start TEST: OMIT (TIME HR:MIN) SDM

Settings: Freq Word (J1-01 & J3-01) = CH 00; Synth Sig (J7 & J9) = 921 MHz; Rcv Sig (J8) = 607.35 MHz at 0 dBm

UUT Currents: +5 Volts dc: _____ (mA) -5 Volts dc: _____ (mA)

+15 Volts dc: _____ (mA) -15 Volts dc: _____ (mA)

End TEST: OMIT (TIME HR:MIN) SDM

TEST continued next page

TRIAL TEST RUN

STEP-STRESS TEST DATA SHEET (CONTINUED)

UUT Serial Number (enter MSN): -100/349 Test Date: 11-26-91

STEP-STRESS Level (enter 0 - 10): 0 GSG 92466 TEST

UUT PERFORMANCE TEST DATA CONTINUED

UUT DIGITAL OUTPUT TEST: At Dwell; Set UUT Synthesized Signal and Received Signal Inputs for Channel 00. Decrease Received Signal Input from 0 dBm to -75 dBm and record Duty Cycle (t/T) for each UUT Digital Output. Repeat with setting for Channels 50 at this STEP-STRESS Level.

Start TEST: 21:50 (TIME HR:MIN)

Channel 00: Settings: Synth Sig (J7 & J9) = 921 MHz; Rcv Sig (J8) = 607.35 MHz at 0 to -75 dBm

Rcv Sig Inputs	I & Q Bits	Detector 1 t (usec) / T (usec)	Detector 1 Duty Cycle (percent)	Detector 2 t (usec) / T (usec)	Detector 2 Duty Cycle (percent)	Observations
0 dBm	I > 0	4.80/9.60	50.0	4.80/9.60	50.0	
	I > Q	4.80/9.60	50.0	4.80/9.60	50.0	
	I + Q > 0	4.80/9.60	50.0	4.80/9.60	50.0	
	Q > 0	4.80/9.60	50.0	4.48/9.60	46.7	
Other: Specify _____ (dBm)	I > 0					
	I > Q					
	I + Q > 0					
	Q > 0					
Other: Specify _____ (dBm)	I > 0					
	I > Q					
	I + Q > 0					
	Q > 0					
-75 dBm	I > 0	4.80/9.60	50.0	4.80/9.60	50.0	
	I > Q	4.80/9.60	50.0	4.80/9.60	50.0	
	I + Q > 0	4.80/9.60	50.0	4.48/9.60	46.7	
	Q > 0	4.80/9.60	50.0	4.16/9.60	43.3	

TEST Continued next page.

STEP-STRESS TEST DATA SHEET (CONTINUED)

UUT Serial Number (enter MSN): ~100/349 Test Date: 11-26-91

STEP-STRESS Level (enter 0 - 10): 0

GSS 92466 TEST

UUT PERFORMANCE TEST DATA CONTINUED

DIGITAL OUTPUT TEST: Continued. (Refer to Procedure on previous page)

Channel 50: Settings: Synth Sig (J7 & J9) = 684 MHz; Rcv Sig (J8) = 370.35 MHz at 0 to -75 dBm

Rcv Sig Input	I & Q -Bits	Detector 1 t (usec) T (usec)	Detector 1 Duty Cycle (percent)	Detector 2 t (usec) T (usec)	Detector 2 Duty Cycle (percent)	Observations
0 dBm	I > 0	4.80/9.60	50.0	4.80/9.60	50.0	
	I > Q	4.80/9.60	50.0	4.80/9.60	50.0	
	I + Q > 0	4.80/9.60	50.0	4.80/9.60	50.0	
	Q > 0	4.80/9.60	50.0	4.80/9.60	50.0	
Other: Specify (dBm)	I > 0					
	I > Q					
	I + Q > 0					
	Q > 0					
-75 dBm	I > 0	5.12/9.60	53.3	4.48/9.60	46.7	
	I > Q	4.80/9.60	50.0	4.80/9.60	50.0	
	I + Q > 0	5.12/9.60	53.3	4.48/9.60	46.7	
	Q > 0	4.80/9.60	50.0	4.32/9.60	45.0	

End TEST: 22:11 (TIME HR:MIN) (elapsed time 00:21)

TEST continued next page

TRIAL TEST RUN

STEP-STRESS TEST DATA SHEET (CONTINUED)

UUT Serial Number (enter MSN): ~100/349 Test Date: 11-26-91

STEP-STRESS Level (enter 0 - 10): 0

GSS 92466 TEST

UUT PERFORMANCE TEST DATA CONTINUED

RADIO FREQUENCY OUTPUT TEST: At Dwell; Set UUT Frequency Word Input to Channel 50. Record the Synthesizer Mixer Port Output Frequency & Power. Repeat with settings for Channels 35, 18, and 00 at this STEP-STRESS Level.

Start TEST: 21:05 (TIME HR:MIN)

Channel	Synthesizer 1 (J5) Frequency (MHz)	Synthesizer 1 (J5) Power* (dBm)	Synthesizer 2 (J12) Frequency (MHz)	Synthesizer 2 (J12) Power* (dBm)
50 (684)	684.00	+12.4	683.99	+11.8
35 (729)	729.00	+12.6	729.00	+12.2
18 (825)	825.00	+13.6	825.00	+11.4
00 (921)	920.99	+11.4	920.99	+9.7

*account for cable losses

Observation

Output spectrum is spread over frequency and signal is noisy due to thermocouple wires within cavity acting as antennas. Distortion of PUL being experienced. SDM

Spectrum Analyzer Settings
Span: 15 MHz
Res: 100 KHz
Cable Losses measured (dB)

	J5	J12
684	1.04	1.04
729	0.98	1.00
825	1.10	1.08
921	1.18	1.14

Additional Testing (OPTIONAL): RADIO FREQUENCY OUTPUT TEST — At Dwell; Set UUT Frequency Word Input at Channel 50 thru Channel 00 and measure Synthesizer Mixer Port Output Power at each Frequency.

ATTACH the Data Printout (copy) to this STEP-STRESS TEST DATA SHEET. Label attachment with UUT Serial Number & STRESS-STRESS Level. Tester Name & Date. ATTACHMENT 1 (Check here)

End TEST: 21:28 (TIME HR:MIN) (elapsed time 00:23)

STEP-STRESS LEVEL DATA CONTINUED

TEMPERATURE STEP-STRESS: The Dwell will have a duration of 1-hour at this STEP-STRESS Level.

(Dwell elapsed for 01:19) End DWELL: 22:14 (TIME HR:MIN)

STEP-STRESS LEVEL COMPLETE

TRIAL TEST RUN

Sheet 4A of 4

FULL PRINT-OUT OF Power Output and Frequency [redacted]100-102 Ser. # 349

Power at J5 is 8.9 dBm @ 684.0 MHz (Spec=+9dBm minimum).
Power at J5 is 6.7 dBm @ 687.0 MHz (Spec=+9dBm minimum).
Power at J5 is 8.5 dBm @ 690.0 MHz (Spec=+9dBm minimum).
Power at J5 is 5.2 dBm @ 693.0 MHz (Spec=+9dBm minimum).
Power at J5 is 8.1 dBm @ 696.0 MHz (Spec=+9dBm minimum).
Power at J5 is-2.2 dBm @ 699.0 MHz (Spec=+9dBm minimum).
Power at J5 is 10.7 dBm @ 702.0 MHz (Spec=+9dBm minimum).
Power at J5 is 11.5 dBm @ 705.0 MHz (Spec=+9dBm minimum).
Power at J5 is 10.9 dBm @ 708.0 MHz (Spec=+9dBm minimum).
Power at J5 is 11.6 dBm @ 711.0 MHz (Spec=+9dBm minimum).
Power at J5 is 11.2 dBm @ 714.0 MHz (Spec=+9dBm minimum).
Power at J5 is 11.5 dBm @ 717.0 MHz (Spec=+9dBm minimum).
Power at J5 is 11.2 dBm @ 720.0 MHz (Spec=+9dBm minimum).
Power at J5 is 9.7 dBm @ 723.0 MHz (Spec=+9dBm minimum).
Power at J5 is 9.8 dBm @ 726.0 MHz (Spec=+9dBm minimum).
Power at J5 is 10.7 dBm @ 729.0 MHz (Spec=+9dBm minimum).
Power at J5 is 10.3 dBm @ 732.0 MHz (Spec=+9dBm minimum).
Power at J5 is 10.1 dBm @ 735.0 MHz (Spec=+9dBm minimum).
Power at J5 is 9.4 dBm @ 738.0 MHz (Spec=+9dBm minimum).
Power at J5 is 11.3 dBm @ 741.0 MHz (Spec=+9dBm minimum).
Power at J5 is 8.5 dBm @ 744.0 MHz (Spec=+9dBm minimum).
Power at J5 is 10.6 dBm @ 747.0 MHz (Spec=+9dBm minimum).
Power at J5 is 3.6 dBm @ 750.0 MHz (Spec=+9dBm minimum).
Power at J5 is 8.9 dBm @ 753.0 MHz (Spec=+9dBm minimum).
Power at J5 is 7.7 dBm @ 756.0 MHz (Spec=+9dBm minimum).
Power at J5 is 8.9 dBm @ 759.0 MHz (Spec=+9dBm minimum).
Power at J5 is 7.2 dBm @ 762.0 MHz (Spec=+9dBm minimum).
Power at J5 is 10.4 dBm @ 765.0 MHz (Spec=+9dBm minimum).
Power at J5 is 10.5 dBm @ 768.0 MHz (Spec=+9dBm minimum).
Power at J5 is .7 dBm @ 771.0 MHz (Spec=+9dBm minimum).
Power at J5 is 10.6 dBm @ 774.0 MHz (Spec=+9dBm minimum).
Power at J5 is-1.5 dBm @ 777.0 MHz (Spec=+9dBm minimum).
Power at J5 is 8.8 dBm @ 825.0 MHz (Spec=+9dBm minimum).
Power at J5 is 8.4 dBm @ 828.0 MHz (Spec=+9dBm minimum).
Power at J5 is 10.7 dBm @ 831.0 MHz (Spec=+9dBm minimum).
Power at J5 is 7.7 dBm @ 834.0 MHz (Spec=+9dBm minimum).
Power at J5 is 9.3 dBm @ 837.0 MHz (Spec=+9dBm minimum).
Power at J5 is 9.1 dBm @ 882.0 MHz (Spec=+9dBm minimum).
Power at J5 is 9.3 dBm @ 885.0 MHz (Spec=+9dBm minimum).
Power at J5 is 4.7 dBm @ 888.0 MHz (Spec=+9dBm minimum).
Power at J5 is 7.9 dBm @ 891.0 MHz (Spec=+9dBm minimum).
Power at J5 is 5.5 dBm @ 894.0 MHz (Spec=+9dBm minimum).
Power at J5 is 8.9 dBm @ 897.0 MHz (Spec=+9dBm minimum).
Power at J5 is 9.7 dBm @ 900.0 MHz (Spec=+9dBm minimum).
Power at J5 is 7.4 dBm @ 903.0 MHz (Spec=+9dBm minimum).
Power at J5 is 7.2 dBm @ 906.0 MHz (Spec=+9dBm minimum).
Power at J5 is 5.8 dBm @ 909.0 MHz (Spec=+9dBm minimum).
Power at J5 is 4.6 dBm @ 912.0 MHz (Spec=+9dBm minimum).
Power at J5 is 7.4 dBm @ 915.0 MHz (Spec=+9dBm minimum).
Power at J5 is 5.6 dBm @ 918.0 MHz (Spec=+9dBm minimum).
Power at J5 is 11.2 dBm @ 921.0 MHz (Spec=+9dBm minimum).

MSN -100/349
STEP-STRESS Level 0
11-26-91
ADM 696 92466 TEST

104

TRIAL TEST RUN

Sheet 4B of 4

FULL PRINT-OUT OF Power Output and Frequency [redacted]100-102 Ser. # 349

Power at J12 is 2.5 dBm @ 684.0 MHz (Spec=+9dBm minimum).
Power at J12 is 5.6 dBm @ 687.0 MHz (Spec=+9dBm minimum).
Power at J12 is 4.7 dBm @ 690.0 MHz (Spec=+9dBm minimum).
Power at J12 is 4.8 dBm @ 693.0 MHz (Spec=+9dBm minimum).
Power at J12 is 4.9 dBm @ 696.0 MHz (Spec=+9dBm minimum).
Power at J12 is 4.0 dBm @ 699.0 MHz (Spec=+9dBm minimum).
Power at J12 is 7.7 dBm @ 702.0 MHz (Spec=+9dBm minimum).
Power at J12 is 8.2 dBm @ 705.0 MHz (Spec=+9dBm minimum).
Power at J12 is 7.1 dBm @ 708.0 MHz (Spec=+9dBm minimum).
Power at J12 is 5.4 dBm @ 711.0 MHz (Spec=+9dBm minimum).
Power at J12 is-5.6 dBm @ 714.0 MHz (Spec=+9dBm minimum).
Power at J12 is 6.7 dBm @ 717.0 MHz (Spec=+9dBm minimum).
Power at J12 is 6.1 dBm @ 720.0 MHz (Spec=+9dBm minimum).
Power at J12 is 4.0 dBm @ 723.0 MHz (Spec=+9dBm minimum).
Power at J12 is 5.5 dBm @ 726.0 MHz (Spec=+9dBm minimum).
Power at J12 is 9.1 dBm @ 729.0 MHz (Spec=+9dBm minimum).
Power at J12 is 7.3 dBm @ 732.0 MHz (Spec=+9dBm minimum).
Power at J12 is 7.6 dBm @ 735.0 MHz (Spec=+9dBm minimum).
Power at J12 is 9.4 dBm @ 738.0 MHz (Spec=+9dBm minimum).
Power at J12 is 8.1 dBm @ 741.0 MHz (Spec=+9dBm minimum).
Power at J12 is 8.4 dBm @ 744.0 MHz (Spec=+9dBm minimum).
Power at J12 is 6.8 dBm @ 747.0 MHz (Spec=+9dBm minimum).
Power at J12 is 6.3 dBm @ 750.0 MHz (Spec=+9dBm minimum).
Power at J12 is 6.6 dBm @ 753.0 MHz (Spec=+9dBm minimum).
Power at J12 is 4.0 dBm @ 756.0 MHz (Spec=+9dBm minimum).
Power at J12 is 4.6 dBm @ 759.0 MHz (Spec=+9dBm minimum).
Power at J12 is 9.1 dBm @ 762.0 MHz (Spec=+9dBm minimum).
Power at J12 is 7.7 dBm @ 765.0 MHz (Spec=+9dBm minimum).
Power at J12 is 11.1 dBm @ 768.0 MHz (Spec=+9dBm minimum).
Power at J12 is 8.9 dBm @ 771.0 MHz (Spec=+9dBm minimum).
Power at J12 is 9.3 dBm @ 774.0 MHz (Spec=+9dBm minimum).
Power at J12 is 9.0 dBm @ 777.0 MHz (Spec=+9dBm minimum).
Power at J12 is 9.8 dBm @ 825.0 MHz (Spec=+9dBm minimum).
Power at J12 is 8.7 dBm @ 828.0 MHz (Spec=+9dBm minimum).
Power at J12 is 8.9 dBm @ 831.0 MHz (Spec=+9dBm minimum).
Power at J12 is 8.4 dBm @ 834.0 MHz (Spec=+9dBm minimum).
Power at J12 is 8.0 dBm @ 837.0 MHz (Spec=+9dBm minimum).
Power at J12 is 8.0 dBm @ 882.0 MHz (Spec=+9dBm minimum).
Power at J12 is-3.8 dBm @ 885.0 MHz (Spec=+9dBm minimum).
Power at J12 is-.6 dBm @ 888.0 MHz (Spec=+9dBm minimum).
Power at J12 is 7.9 dBm @ 891.0 MHz (Spec=+9dBm minimum).
Power at J12 is 6.7 dBm @ 894.0 MHz (Spec=+9dBm minimum).
Power at J12 is 5.6 dBm @ 897.0 MHz (Spec=+9dBm minimum).
Power at J12 is-.1 dBm @ 900.0 MHz (Spec=+9dBm minimum).
Power at J12 is-6.5 dBm @ 903.0 MHz (Spec=+9dBm minimum).
Power at J12 is 3.8 dBm @ 906.0 MHz (Spec=+9dBm minimum).
Power at J12 is-2.9 dBm @ 909.0 MHz (Spec=+9dBm minimum).
Power at J12 is-1.2 dBm @ 912.0 MHz (Spec=+9dBm minimum).
Power at J12 is 5.9 dBm @ 915.0 MHz (Spec=+9dBm minimum).
Power at J12 is 4.1 dBm @ 918.0 MHz (Spec=+9dBm minimum).
Power at J12 is 10.0 dBm @ 921.0 MHz (Spec=+9dBm minimum).

MSN -100/349
STEP-STRESS Level 0
11-26-91
ADM 696 92466 TEST

STEP-STRESS TEST DATA SHEET

UUT Serial Number (enter MSN): -100/949 Test Date: 11-26-91

Tester: (Name & stamp below)

STEP-STRESS Level (enter 0 - 10): 1 D.B. Muller GSE 92466 TEST

DAY 2

STEP-STRESS LEVEL DATA

TEMPERATURE STEP-STRESS: Ramp Chamber Temperature to STEP-STRESS Level; Stabilize, and Start Dwell at STEP-STRESS Level.

Begin RAMP: 22:14 (TIME HR:MIN) (Ramp & stabilize 00:35) Start DWELL: 22:49 (TIME HR:MIN)

STEP-STRESS Level Chamber Air Temperature: +68.1 (°C) (Chamber thermocouple reading) Soak @ +69 °C

Flange Temperature: +73.8 (°C) (Thermocouple reading)

STEP-STRESS Level Component Temperature: +78.8 (°C) +1.3 °C / -2.0 °C (refer to Appendix D Table)

VOLTAGE STEP-STRESS: During Temperature Ramp; Increment Voltage to STEP-STRESS Level. (Record settings below)

Supply Voltages: +5 Volts dc: +5.20 (Vdc) -5 Volts dc: -5.20 (Vdc)

+15 Volts dc: +15.50 (Vdc) -15 Volts dc: -15.30 (Vdc)

Aux. Constant - 5 Volts dc Setting: -5.097 (Vdc) A4-R4 and VR1 removed

UUT PERFORMANCE TEST DATA TESTS MAY BE PERFORMED IN ANY ORDER

UUT CURRENT TEST: At Dwell; Set UUT Frequency Word, Synthesized Signal, & Received (0 dBm) Signal Inputs for Channel 00. Record UUT Currents for this STEP-STRESS Level.

Start TEST: OMIT (TIME HR:MIN) SDM

Settings: Freq Word (J1-01 & J3-01) = CH 00; Synth Sig (J7 & J9) = 921 MHz; Rcv Sig (J8) = 607.35 MHz at 0 dBm

UUT Currents: +5 Volts dc: _____ (mA) -5 Volts dc: _____ (mA)

+15 Volts dc: _____ (mA) -15 Volts dc: _____ (mA)

End TEST: OMIT (TIME HR:MIN) SDM

TEST continued next page

STEP-STRESS TEST DATA SHEET (CONTINUED)

UUT Serial Number (enter MSN): -100/349 Test Date: 11-26-91

STEP-STRESS Level (enter 0 - 10): 1 GSE 92466 TEST

UUT PERFORMANCE TEST DATA CONTINUED

UUT DIGITAL OUTPUT TEST: At Dwell; Set UUT Synthesized Signal and Received Signal Inputs for Channel 00. Decrease Received Signal Input from 0 dBm to -75 dBm and record Duty Cycle (t/T) for each UUT Digital Output. Repeat with setting for Channels 50 at this STEP-STRESS Level.

Start TEST: 22:52 (TIME HR:MIN)

Channel 00: Settings: Synth Sig (J7 & J9) = 921 MHz; Rcv Sig (J8) = 607.35 MHz at 0 to -75 dBm

Rcv Sig Input	I & Q -Bits	Detector 1 t (usec) / T (usec)	Detector 1 Duty Cycle (percent)	Detector 2 t (usec) / T (usec)	Detector 2 Duty Cycle (percent)	Observations
0 dBm	I > 0	4.74/9.48	50.0	4.611/9.54	48.3	
	I > Q	4.563/9.42	48.3	4.74/9.48	50.0	
	I + Q > 0	4.77/9.54	50.0	4.74/9.48	50.0	
	Q > 0	4.563/9.42	48.3	4.424/9.48	44.7	
Other: Specify ____ (dBm)	I > 0					
	I > Q					
	I + Q > 0					
	Q > 0					
Other: Specify ____ (dBm)	I > 0					
	I > Q					
	I + Q > 0					
	Q > 0					
-75 dBm	I > 0	4.96/9.60	51.7	4.452/9.54	46.7	
	I > Q	4.74/9.60	49.4	4.74/9.60	49.4	
	I + Q > 0	4.898/9.48	51.7	4.16/9.60	43.9	
	Q > 0	4.929/9.54	51.7	4.293/9.54	45.0	23:06

TEST Continued next page.

STEP-STRESS TEST DATA SHEET (CONTINUED)

UUT Serial Number (enter MSN): -100/349 Test Date: 11-26-91

STEP-STRESS Level (enter 0 - 10): 1

GSE 92466 TEST

UUT PERFORMANCE TEST DATA CONTINUED

DIGITAL OUTPUT TEST: Continued. (Refer to Procedure on previous page)

Channel 50: Settings: Synth Sig (J7 & J9) = 684 MHz; Rev Sig (J8) = 370.35 MHz at 0 to -75 dBm

Rev Sig Input	I & Q Bits	Detector 1 t (max) / T (max)	Detector 1 Duty Cycle (percent)	Detector 2 t (max) / T (max)	Detector 2 Duty Cycle (percent)	Observations
0 dBm	I > 0	4.80/9.60	50.0	4.80/9.60	50.0	
	I > 0	4.64/9.60	48.3	4.80/9.60	50.0	
	I + Q > 0	4.80/9.60	50.0	4.80/9.60	50.0	
	Q > 0	4.80/9.60	50.0	4.64/9.60	48.3	
Other: Specify (dBm)	I > 0					
	I > 0					
	I + Q > 0					
	Q > 0					
Other: Specify (dBm)	I > 0					
	I > 0					
	I + Q > 0					
	Q > 0					
-75 dBm	I > 0	4.96/9.60	51.7	4.48/9.60	46.7	
	I > 0	4.80/9.60	50.0	4.80/9.60	50.0	
	I + Q > 0	4.96/9.60	51.7	4.32/9.60	45.0	
	Q > 0	4.96/9.60	51.7	4.32/9.60	45.0	

End TEST: 23:14 (TIME HR:MIN) (elapsed time 00:22)

TEST continued next page

TRIAL TEST RUN

STEP-STRESS TEST DATA SHEET (CONTINUED)

UUT Serial Number (enter MSN): -100/349 Test Date: 11-26-91

STEP-STRESS Level (enter 0 - 10): 1

GSE 92466 TEST

UUT PERFORMANCE TEST DATA CONTINUED

RADIO FREQUENCY OUTPUT TEST: At Dwell; Set UUT Frequency Word Input to Channel 50. Record the Synthesizer Mixer Port Output Frequency & Power. Repeat with settings for Channels 35, 18, and 00 at this STEP-STRESS Level.

Start TEST: 23:15 (TIME HR:MIN)

Channel	Synthesizer 1 (J5) Frequency (MHz)	Synthesizer 1 (J5) Power* (dBm)	Synthesizer 2 (J12) Frequency (MHz)	Synthesizer 2 (J12) Power* (dBm)
50 (684)	640.97	-7.1	683.99	+10.0
35 (779)	922.72	+12.7	724.01	+11.0
18 (833)	772.26	+13.4	825.02	+11.6
00 (921)	842.30	+12.3	921.00	+10.3

*account for cable losses

Observation

Cable Losses dB

	35	12
684	1.04	1.04
729	0.98	1.00
825	1.10	1.08
921	1.18	1.14

Synth partially unlocked and pulled off frequency. Cycled UUT power on/off to see effect on lock. Didn't change freq.

Additional Testing (OPTIONAL): RADIO FREQUENCY OUTPUT TEST — At Dwell; Set UUT Frequency Word Input at Channel 50 thru Channel 00 and measure Synthesizer Mixer Port Output Power at each Frequency.

ATTACH the Data Printout (copy) to this STEP-STRESS TEST DATA SHEET. Label attachment with UUT Serial Number & STREP-STRESS Level. Tester Name & Date. ATTACHMENT ✓ (Check here)

End TEST: 23:42 (TIME HR:MIN) (elapsed time 00:27)

STEP-STRESS LEVEL DATA CONTINUED

TEMPERATURE STEP-STRESS: The Dwell will have a duration of 1-hour at this STEP-STRESS Level.

(dwell time 00:55) End DWELL: 23:44 (TIME HR:MIN)

STEP-STRESS LEVEL COMPLETE

TRIAL TEST RUN

Sheet 4A of 4

FULL PRINT-OUT OF Power Output and Frequency [redacted]-~~102~~ 100 Ser. # 349

Power at J5 is-61.2 dBm @ 684.0 MHz (Spec=+9dBm minimum).
Power at J5 is-64.8 dBm @ 687.0 MHz (Spec=+9dBm minimum).
Power at J5 is-62.7 dBm @ 690.0 MHz (Spec=+9dBm minimum).
Power at J5 is-65.0 dBm @ 693.0 MHz (Spec=+9dBm minimum).
Power at J5 is-60.9 dBm @ 696.0 MHz (Spec=+9dBm minimum).
Power at J5 is-62.8 dBm @ 699.0 MHz (Spec=+9dBm minimum).
Power at J5 is-62.2 dBm @ 702.0 MHz (Spec=+9dBm minimum).
Power at J5 is-61.7 dBm @ 705.0 MHz (Spec=+9dBm minimum).
Power at J5 is-61.4 dBm @ 708.0 MHz (Spec=+9dBm minimum).
Power at J5 is-63.7 dBm @ 711.0 MHz (Spec=+9dBm minimum).
Power at J5 is-65.1 dBm @ 714.0 MHz (Spec=+9dBm minimum).
Power at J5 is-64.2 dBm @ 717.0 MHz (Spec=+9dBm minimum).
Power at J5 is-64.6 dBm @ 720.0 MHz (Spec=+9dBm minimum).
Power at J5 is-63.5 dBm @ 723.0 MHz (Spec=+9dBm minimum).
Power at J5 is-62.2 dBm @ 726.0 MHz (Spec=+9dBm minimum).
Power at J5 is-62.5 dBm @ 729.0 MHz (Spec=+9dBm minimum).
Power at J5 is-64.3 dBm @ 732.0 MHz (Spec=+9dBm minimum).
Power at J5 is-67.9 dBm @ 735.0 MHz (Spec=+9dBm minimum).
Power at J5 is-65.3 dBm @ 738.0 MHz (Spec=+9dBm minimum).
Power at J5 is-64.4 dBm @ 741.0 MHz (Spec=+9dBm minimum).
Power at J5 is-63.1 dBm @ 744.0 MHz (Spec=+9dBm minimum).
Power at J5 is-61.6 dBm @ 747.0 MHz (Spec=+9dBm minimum).
Power at J5 is-60.2 dBm @ 750.0 MHz (Spec=+9dBm minimum).
Power at J5 is-61.7 dBm @ 753.0 MHz (Spec=+9dBm minimum).
Power at J5 is-61.7 dBm @ 756.0 MHz (Spec=+9dBm minimum).
Power at J5 is-63.5 dBm @ 759.0 MHz (Spec=+9dBm minimum).
Power at J5 is-61.8 dBm @ 762.0 MHz (Spec=+9dBm minimum).
Power at J5 is-61.8 dBm @ 765.0 MHz (Spec=+9dBm minimum).
Power at J5 is-61.1 dBm @ 768.0 MHz (Spec=+9dBm minimum).
Power at J5 is-64.9 dBm @ 771.0 MHz (Spec=+9dBm minimum).
Power at J5 is-63.0 dBm @ 774.0 MHz (Spec=+9dBm minimum).
Power at J5 is-61.7 dBm @ 777.0 MHz (Spec=+9dBm minimum).
Power at J5 is-61.1 dBm @ 825.0 MHz (Spec=+9dBm minimum).
Power at J5 is-65.8 dBm @ 828.0 MHz (Spec=+9dBm minimum).
Power at J5 is-65.3 dBm @ 831.0 MHz (Spec=+9dBm minimum).
Power at J5 is-63.4 dBm @ 834.0 MHz (Spec=+9dBm minimum).
Power at J5 is-59.5 dBm @ 837.0 MHz (Spec=+9dBm minimum).
Power at J5 is-63.2 dBm @ 882.0 MHz (Spec=+9dBm minimum).
Power at J5 is-64.7 dBm @ 885.0 MHz (Spec=+9dBm minimum).
Power at J5 is-63.0 dBm @ 888.0 MHz (Spec=+9dBm minimum).
Power at J5 is-65.7 dBm @ 891.0 MHz (Spec=+9dBm minimum).
Power at J5 is-62.5 dBm @ 894.0 MHz (Spec=+9dBm minimum).
Power at J5 is-60.3 dBm @ 897.0 MHz (Spec=+9dBm minimum).
Power at J5 is-63.8 dBm @ 900.0 MHz (Spec=+9dBm minimum).
Power at J5 is-61.3 dBm @ 903.0 MHz (Spec=+9dBm minimum).
Power at J5 is-62.8 dBm @ 906.0 MHz (Spec=+9dBm minimum).
Power at J5 is-59.7 dBm @ 909.0 MHz (Spec=+9dBm minimum).
Power at J5 is-62.6 dBm @ 912.0 MHz (Spec=+9dBm minimum).
Power at J5 is-62.7 dBm @ 915.0 MHz (Spec=+9dBm minimum).
Power at J5 is-63.4 dBm @ 918.0 MHz (Spec=+9dBm minimum).
Power at J5 is-61.0 dBm @ 921.0 MHz (Spec=+9dBm minimum).

MSN -100/349
STEP-STRESS Level 1
11-26-91
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TRIAL TEST RUN

Sheet 4B of 4

FULL PRINT-OUT OF Power Output and Frequency [redacted]-~~102~~ 100 Ser. # 349

Power at J12 is 8.4 dBm @ 684.0 MHz (Spec=+9dBm minimum).
Power at J12 is 4.3 dBm @ 687.0 MHz (Spec=+9dBm minimum).
Power at J12 is 2.2 dBm @ 690.0 MHz (Spec=+9dBm minimum).
Power at J12 is-8.1 dBm @ 693.0 MHz (Spec=+9dBm minimum).
Power at J12 is-2.8 dBm @ 696.0 MHz (Spec=+9dBm minimum).
Power at J12 is .8 dBm @ 699.0 MHz (Spec=+9dBm minimum).
Power at J12 is 4.7 dBm @ 702.0 MHz (Spec=+9dBm minimum).
Power at J12 is 7.0 dBm @ 705.0 MHz (Spec=+9dBm minimum).
Power at J12 is 3.5 dBm @ 708.0 MHz (Spec=+9dBm minimum).
Power at J12 is 4.2 dBm @ 711.0 MHz (Spec=+9dBm minimum).
Power at J12 is 4.9 dBm @ 714.0 MHz (Spec=+9dBm minimum).
Power at J12 is-1.6 dBm @ 717.0 MHz (Spec=+9dBm minimum).
Power at J12 is 2.8 dBm @ 720.0 MHz (Spec=+9dBm minimum).
Power at J12 is 5.2 dBm @ 723.0 MHz (Spec=+9dBm minimum).
Power at J12 is 6.3 dBm @ 726.0 MHz (Spec=+9dBm minimum).
Power at J12 is 8.1 dBm @ 729.0 MHz (Spec=+9dBm minimum).
Power at J12 is 5.6 dBm @ 732.0 MHz (Spec=+9dBm minimum).
Power at J12 is 9.5 dBm @ 735.0 MHz (Spec=+9dBm minimum).
Power at J12 is 7.9 dBm @ 738.0 MHz (Spec=+9dBm minimum).
Power at J12 is 8.0 dBm @ 741.0 MHz (Spec=+9dBm minimum).
Power at J12 is 8.6 dBm @ 744.0 MHz (Spec=+9dBm minimum).
Power at J12 is 9.5 dBm @ 747.0 MHz (Spec=+9dBm minimum).
Power at J12 is 7.1 dBm @ 750.0 MHz (Spec=+9dBm minimum).
Power at J12 is 1.1 dBm @ 753.0 MHz (Spec=+9dBm minimum).
Power at J12 is 7.7 dBm @ 756.0 MHz (Spec=+9dBm minimum).
Power at J12 is .3 dBm @ 759.0 MHz (Spec=+9dBm minimum).
Power at J12 is 8.0 dBm @ 762.0 MHz (Spec=+9dBm minimum).
Power at J12 is 9.9 dBm @ 765.0 MHz (Spec=+9dBm minimum).
Power at J12 is 7.9 dBm @ 768.0 MHz (Spec=+9dBm minimum).
Power at J12 is 9.3 dBm @ 771.0 MHz (Spec=+9dBm minimum).
Power at J12 is 9.6 dBm @ 774.0 MHz (Spec=+9dBm minimum).
Power at J12 is 7.5 dBm @ 777.0 MHz (Spec=+9dBm minimum).
Power at J12 is 10.2 dBm @ 825.0 MHz (Spec=+9dBm minimum).
Power at J12 is 7.3 dBm @ 828.0 MHz (Spec=+9dBm minimum).
Power at J12 is 7.1 dBm @ 831.0 MHz (Spec=+9dBm minimum).
Power at J12 is 5.0 dBm @ 834.0 MHz (Spec=+9dBm minimum).
Power at J12 is 8.5 dBm @ 837.0 MHz (Spec=+9dBm minimum).
Power at J12 is 3.0 dBm @ 882.0 MHz (Spec=+9dBm minimum).
Power at J12 is 7.4 dBm @ 885.0 MHz (Spec=+9dBm minimum).
Power at J12 is 3.7 dBm @ 888.0 MHz (Spec=+9dBm minimum).
Power at J12 is 6.5 dBm @ 891.0 MHz (Spec=+9dBm minimum).
Power at J12 is 7.5 dBm @ 894.0 MHz (Spec=+9dBm minimum).
Power at J12 is .4 dBm @ 897.0 MHz (Spec=+9dBm minimum).
Power at J12 is 6.2 dBm @ 900.0 MHz (Spec=+9dBm minimum).
Power at J12 is 5.9 dBm @ 903.0 MHz (Spec=+9dBm minimum).
Power at J12 is 5.8 dBm @ 906.0 MHz (Spec=+9dBm minimum).
Power at J12 is 7.9 dBm @ 909.0 MHz (Spec=+9dBm minimum).
Power at J12 is 7.7 dBm @ 912.0 MHz (Spec=+9dBm minimum).
Power at J12 is 3.9 dBm @ 915.0 MHz (Spec=+9dBm minimum).
Power at J12 is 4.6 dBm @ 918.0 MHz (Spec=+9dBm minimum).
Power at J12 is 6.8 dBm @ 921.0 MHz (Spec=+9dBm minimum).

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STEP-STRESS Level 1
11-26-91
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STEP-STRESS TEST DATA SHEET

Sheet 1 of 4

UUT Serial Number (enter MSN): -100/349 Test Date: 11-26-91

Tester: (Name & stamp below) A.D. Mueller

STEP-STRESS Level (enter 0 - 10): 2

DAY 2

STEP-STRESS LEVEL DATA

TEMPERATURE STEP-STRESS: Ramp Chamber Temperature to STEP-STRESS Level; Stabilize, and Start Dwell at STEP-STRESS Level.

Begin RAMP: 23:44 (TIME HR:MIN) (Ramp & Stabilize 00:30) Start DWELL: 00:14 (TIME HR:MIN) 11-27-91

STEP-STRESS Level Chamber Air Temperature: +77 setting (°C) (Chamber thermocouple reading) Reading +75.8 Flange Temperature: +81.8 (°C) (Thermocouple reading)

STEP-STRESS Level Component Temperature: +87.1 (°C) +1.8/-2.0°C (refer to Appendix D Table)

VOLTAGE STEP-STRESS: During Temperature Ramp; Increment Voltage to STEP-STRESS Level. (Record settings below)

Supply Voltages: +5 Volts dc: +5.40 (Vdc) -5 Volts dc: -5.40 (Vdc)

+15 Volts dc: +15.60 (Vdc) -15 Volts dc: -15.60 (Vdc)

Aux. Constant - 5 Volts dc Setting: -5.096 (Vdc) A4-R4 & VR1 REMOVED

UUT PERFORMANCE TEST DATA TESTS MAY BE PERFORMED IN ANY ORDER

UUT CURRENT TEST: At Dwell; Set UUT Frequency Word, Synthesized Signal, & Received (0 dBm) Signal Inputs for Channel 00. Record UUT Currents for this STEP-STRESS Level.

Start TEST: OMIT (TIME HR:MIN) 5-Day

Settings: Freq Word (J1-01 & J3-01) = C11 00; Synth Sig (J7 & J9) = 921 MHz; Rcv Sig (J8) = 607.35 MHz at 0 dBm

UUT Currents: +5 Volts dc: _____ (mA) -5 Volts dc: _____ (mA)

+15 Volts dc: _____ (mA) -15 Volts dc: _____ (mA)

End TEST: OMIT (TIME HR:MIN) 5-Day

TEST continued next page

STEP-STRESS TEST DATA SHEET (CONTINUED)

Sheet 2 of 4

UUT Serial Number (enter MSN): -100/349 Test Date: 11-27-91

STEP-STRESS Level (enter 0 - 10): 2

UUT PERFORMANCE TEST DATA CONTINUED

UUT DIGITAL OUTPUT TEST: At Dwell; Set UUT Synthesized Signal and Received Signal Inputs for Channel 00. Decrease Received Signal Input from 0 dBm to -75 dBm and record Duty Cycle (I/T) for each UUT Digital Output. Repeat with setting for Channels 50 at this STEP-STRESS Level.

Start TEST: MONITORED ONLY (TIME HR:MIN)

Channel 00: Settings: Synth Sig (J7 & J9) = 921 MHz; Rcv Sig (J8) = 607.35 MHz at 0 to -75 dBm

Rcv Sig Input	I & Q Bits	Detector 1 t (usec) T (usec)	Detector 1 Duty Cycle (percent)	Detector 2 t (usec) T (usec)	Detector 2 Duty Cycle (percent)	Observations
0 dBm	I > 0					
	I > Q	OMIT		OMIT		
	I + Q > 0					
	Q > 0					
Other: Specify (dBm)	I > 0					
	I > Q					
	I + Q > 0					
	Q > 0					
Other: Specify (dBm)	I > 0	MONITORED DETECTOR #1 I & Q Bits only @ -75dBm CH00 Seemed unchanged from Level 1 Observations				
	I > Q					
	I + Q > 0					
	Q > 0					
-75 dBm	I > 0					
	I > Q	SEE NOTE		OMITTED		
	I + Q > 0					
	Q > 0					

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TEST Continued next page.

STEP-STRESS TEST DATA SHEET (CONTINUED)

UUT Serial Number (enter MSN): -100/349 Test Date: 11-27-91

STEP-STRESS Level (enter 0 - 10): 2

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UUT PERFORMANCE TEST DATA CONTINUED

DIGITAL OUTPUT TEST: Continued. (Refer to Procedure on previous page)

Channel 50: Settings: Synth Sig (J7 & J9) = 684 MHz; Rcv Sig (J8) = 370.35 MHz at 0 to -75 dBm

Rcv Sig Input	I & Q -Bits	Detector 1 I (max) T (sec)	Detector 1 Duty Cycle (percent)	Detector 2 I (max) T (sec)	Detector 2 Duty Cycle (percent)	Observations
0 dBm	I > 0					
	I > Q					
	I + Q > 0					
	Q > 0					
Other: Specify (dBm)	I > 0					
	I > Q					
	I + Q > 0					
	Q > 0					
Other: Specify (dBm)	I > 0					
	I > Q					
	I + Q > 0					
	Q > 0					
-75 dBm	I > 0					
	I > Q					
	I + Q > 0					
	Q > 0					

OMITTED THIS STEP

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GSG 92466 TEST

End TEST: MONITORED ONLY (TIME HR:MIN)

TEST continued next page

STEP-STRESS TEST DATA SHEET (CONTINUED)

UUT Serial Number (enter MSN): -100/349 Test Date: 11-27-91

STEP-STRESS Level (enter 0 - 10): 2

GSG 92466 TEST

UUT PERFORMANCE TEST DATA CONTINUED

RADIO FREQUENCY OUTPUT TEST: At Dwell: Set UUT Frequency Word Input to Channel 50. Record the Synthesizer Mixer Port Output Frequency & Power. Repeat with settings for Channels 35, 18, and 00 at this STEP-STRESS Level.

Start TEST: MONITORED (TIME HR:MIN)

Channel	Synthesizer 1 (J5) Frequency (MHz)	Synthesizer 1 (J5) Power* (dBm)	Synthesizer 2 (J12) Frequency (MHz)	Synthesizer 2 (J12) Power* (dBm)	Observation *account for cable losses
50 (MAX)					
35 (TYP)					MONITORED CH 00 OUTPUT J5 & J12 ONLY
18 (MID)					
00 (MIN)	SAME AS LEVEL 1		SAME AS LEVEL 1		A. D. Mueller 11-27-91 GSG 92466 TEST

Additional Testing (OPTIONAL): **RADIO FREQUENCY OUTPUT TEST** At Dwell: Set UUT Frequency Word Input at Channel 50 thru Channel 00 and measure Synthesizer Mixer Port Output Power at each Frequency.

ATTACH the Data Printout (copy) to this STEP-STRESS TEST DATA SHEET. Label attachment with UUT Serial Number & STEP-STRESS Level. Tester Name & Date. ATTACHMENT (Check here)

End TEST: MONITORED (TIME HR:MIN)

STEP-STRESS LEVEL DATA CONTINUED

TEMPERATURE STEP-STRESS: The Dwell will have a duration of 1-hour at this STEP-STRESS Level.

(Dwell start time 00:15 elapsed) End DWELL: 00:29 (TIME HR:MIN)

STEP-STRESS LEVEL COMPLETE

STEP-STRESS TEST DATA SHEET

Sheet 1 of 4

UUT Serial Number (enter MSN): -100/349 Test Date: 11-27-91

Tester: (Name & stamp below)

STEP-STRESS Level (enter 0 - 10): 3

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DAY # 2

STEP-STRESS LEVEL DATA

TEMPERATURE STEP-STRESS: Ramp Chamber Temperature to STEP-STRESS Level; Stabilize, and Start Dwell at STEP-STRESS Level.

Begin RAMP: 00:29 (Ramp and stabilized 00:30) Start DWELL: 00:59
(TIME HR:MIN)

STEP-STRESS Level Chamber Air Temperature: +85 Setting (°C) Flange Temperature: +89.8 (°C)
(Chamber thermocouple reading) +83.5 Reading (Thermocouple reading)

STEP-STRESS Level Component Temperature: +95.5 (°C) +1.5°C/-2.2°C
(refer to Appendix D Table)

VOLTAGE STEP-STRESS: During Temperature Ramp; Increment Voltage to STEP-STRESS Level. (Record settings below)

Supply Voltages: +5 Volts dc: +5.60 (Vdc) -5 Volts dc: -5.60 (Vdc)

+15 Volts dc: +15.90 (Vdc) -15 Volts dc: -15.90 (Vdc)

Aux. Constant - 5 Volts dc Setting: -5.097 (Vdc) A4-R4 & VR1 removed from CKT

UUT PERFORMANCE TEST DATA TESTS MAY BE PERFORMED IN ANY ORDER

UUT CURRENT TEST: At Dwell; Set UUT Frequency Word, Synthesized Signal, & Received (0 dBm) Signal Inputs for Channel 00. Record UUT Currents for this STEP-STRESS Level.

Start TEST: OMIT Sam
(TIME HR:MIN)

Settings: Freq Word (J1-01 & J3-01) = C1100; Synth Sig (J7 & J9) = 921 MHz; Rcv Sig (J8) = 607.35 MHz at 0 dBm

UUT Currents: +5 Volts dc: _____ (mA) -5 Volts dc: _____ (mA)

+15 Volts dc: _____ (mA) -15 Volts dc: _____ (mA)

End TEST: OMIT Sam
(TIME HR:MIN)

TEST continued next page

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STEP-STRESS TEST DATA SHEET (CONTINUED)

Sheet 2 of 4

UUT Serial Number (enter MSN): -100/349 Test Date: 11-27-91

STEP-STRESS Level (enter 0 - 10): 3

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UUT PERFORMANCE TEST DATA CONTINUED

UUT DIGITAL OUTPUT TEST: At Dwell; Set UUT Synthesized Signal and Received Signal Inputs for Channel 00. Decrease Received Signal Input from 0 dBm to -75 dBm and record Duty Cycle (t/T) for each UUT Digital Output. Repeat with setting for Channels 50 at this STEP-STRESS Level.

Start TEST: MONITORED
(TIME HR:MIN)

Channel 00: Settings: Synth Sig (J7 & J9) = 921 MHz; Rcv Sig (J8) = 607.35 MHz at 0 to -75 dBm

Rcv Sig Input	I & Q -Bits	Detector 1 t (usec) T (usec)	Detector 1 Duty Cycle (percent)	Detector 2 t (usec) T (usec)	Detector 2 Duty Cycle (percent)	Observations
0 dBm	I > 0					
	I > Q		MONITORED AT MIN INPUT OF -75dBm ONLY			
	I + Q > 0					
	Q > 0					
Other: Specify (dBm)	I > 0					
	I > Q					
	I + Q > 0					
	Q > 0					
Other: Specify (dBm)	I > 0					
	I > Q					
	I + Q > 0					
	Q > 0					
-75 dBm	I > 0		MONITORED THESE BITS ONLY			
	I > Q		CH. 00 @ -75 dBm input			
	I + Q > 0		Detector #1 & #2			
	Q > 0		Noise has increased but duty cycles similar to 50% ± 2%			Level 1 of 2

TEST Continued next page.

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STEP-STRESS TEST DATA SHEET (CONTINUED)

UUT Serial Number (enter MSN): - 100/349 Test Date: 11-27-91

STEP-STRESS Level (enter 0 - 10): 3

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UUT PERFORMANCE TEST DATA CONTINUED

DIGITAL OUTPUT TEST: Continued. (Refer to Procedure on previous page)

Channel 50: Settings: Synth Sig (J7 & J9) = 484 MHz; Rev Sig (J8) = 370.35 MHz at 0 to -75 dBm

Rev Sig Input	I & Q -Bits	Detector 1 t (msec) T (sec)	Detector 1 Duty Cycle (percent)	Detector 2 t (msec) T (sec)	Detector 2 Duty Cycle (percent)	Observations
0 dBm	I > 0					
	I > Q					
	I + Q > 0					
	Q > 0					
Other: Specify (dBm)	I > 0					
	I > Q					
	I + Q > 0					
	Q > 0					
Other: Specify (dBm)	I > 0					
	I > Q					
	I + Q > 0					
	Q > 0					
-75 dBm	I > 0					
	I > Q					
	I + Q > 0					
	Q > 0					

Didn't Do CH 50

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End TEST: MONITORED ONLY CH 00 (TIME HR:MIN)

TEST continued next page

STEP-STRESS TEST DATA SHEET (CONTINUED)

UUT Serial Number (enter MSN): -100/349 Test Date: 11-27-91

STEP-STRESS Level (enter 0 - 10): 3

686 92466 TEST

UUT PERFORMANCE TEST DATA CONTINUED

RADIO FREQUENCY OUTPUT TEST: At Dwell; Set UUT Frequency Word Input to Channel 50. Record the Synthesizer Mixer Port Output Frequency & Power. Repeat with settings for Channels 35, 18, and 00 at this STEP-STRESS Level.

Start TEST: MONITORING (TIME HR:MIN)

Channel	Synthesizer 1 (J5) Frequency (MHz)	Synthesizer 1 (J5) Power* (dBm)	Synthesizer 2 (J12) Frequency (MHz)	Synthesizer 2 (J12) Power* (dBm)	Observation *account for cable losses
50 (hex)	OMIT		OMIT		
35 (hex)	OMIT		OMIT		
18 (hex)	OMIT		OMIT		
00 (hex)	MONITORED: OUTPUT POWER DECREASING & OFF FREQUENCY		OUTPUT SEEN ONLY IN POWER YET PULLED OFF FREQUENCY		

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Additional Testing (OPTIONAL): RADIO FREQUENCY OUTPUT TEST — At Dwell; Set UUT Frequency Word Input at Channel 50 thru Channel 00 and measure Synthesizer Mixer Port Output Power at each Frequency.

ATTACH the Data Printout (copy) to this STEP-STRESS TEST DATA SHEET. Label attachment with UUT Serial Number & STEP-STRESS Level. Tester Name & Date. ATTACHMENT (Check here)

End TEST: MONITORING (TIME HR:MIN)

STEP-STRESS LEVEL DATA CONTINUED

TEMPERATURE STEP-STRESS: The Dwell will have a duration of 1-hour at this STEP-STRESS Level.

(Doubled 00:29 total shintaval time) End DWELL: 01:28 (TIME HR:MIN)

STEP-STRESS LEVEL COMPLETE

STEP-STRESS TEST DATA SHEET

UUT Serial Number (enter MSN): -100/349 Test Date: 11-27-91

Tester: (Name & stamp below)

STEP-STRESS Level (enter 0 - 10): 4

A.D. Mueller 696 92466 TEST

Day 2

STEP-STRESS LEVEL DATA

TEMPERATURE STEP-STRESS: Ramp Chamber Temperature to STEP-STRESS Level; Stabilize, and Start Dwell at STEP-STRESS Level.

Begin RAMP: 01:28 (TIME HR:MN) (Ramp/Stabilize 00:30) Start DWELL: 01:58 (TIME HR:MN)

STEP-STRESS Level Chamber Air Temperature: +93 (°C) (Chamber thermocouple reading) +91.3°C Flange Temperature: +98 (°C) (Thermocouple reading)

STEP-STRESS Level Component Temperature: +104.0 (°C) (refer to Appendix B Table) +1.8°C/-2.4°C

VOLTAGE STEP-STRESS: During Temperature Ramp; Increment Voltage to STEP-STRESS Level. (Record settings below)

Supply Voltages: +5 Volts dc: +5.80 (Vdc) -5 Volts dc: -5.80 (Vdc)

+15 Volts dc: +16.20 (Vdc) -15 Volts dc: -16.20 (Vdc)

Aux. Constant -5 Volts dc Setting: -5.097 (Vdc) A4-A9 and A11 Removed

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UUT PERFORMANCE TEST DATA TESTS MAY BE PERFORMED IN ANY ORDER

UUT CURRENT TEST: At Dwell; Set UUT Frequency Word, Synthesized Signal, & Received (0 dBm) Signal Inputs for Channel 00. Record UUT Currents for this STEP-STRESS Level.

Start TEST: OMIT (TIME HR:MN) SDM

Settings: Freq Word (J1-01 & J3-01) = C11 00; Synth Sig (J7 & J9) = 921 MHz; Rcv Sig (J8) = 607.35 MHz at 0 dBm

UUT Currents: +5 Volts dc: _____ (mA) -5 Volts dc: _____ (mA)

+15 Volts dc: _____ (mA) -15 Volts dc: _____ (mA)

End TEST: OMIT (TIME HR:MN) SDM

TEST continued next page

STEP-STRESS TEST DATA SHEET (CONTINUED)

UUT Serial Number (enter MSN): -100/349 Test Date: 11-27-91

STEP-STRESS Level (enter 0 - 10): 4

696 92466 TEST

UUT PERFORMANCE TEST DATA CONTINUED

UUT DIGITAL OUTPUT TEST: At Dwell; Set UUT Synthesized Signal and Received Signal Inputs for Channel 00. Decrease Received Signal Input from 0 dBm to -75 dBm and record Duty Cycle (t/T) for each UUT Digital Output. Repeat with setting for Channels 50 at this STEP-STRESS Level.

Start TEST: 02:00 (TIME HR:MN)

Channel 00: Settings: Synth Sig (J7 & J9) = 921 MHz; Rcv Sig (J8) = 607.35 MHz at 0 to -75 dBm

Rcv Sig Input	I & Q -Bits	Detector 1 t (usec) / T (usec)	Detector 1 Duty Cycle (percent)	Detector 2 t (usec) / T (usec)	Detector 2 Duty Cycle (percent)	Observations
0 dBm	I > 0	4.80/9.60	50.0	4.80/9.60	50.0	
	I > Q	4.80/9.60	50.0	4.80/9.60	50.0	
	I + Q > 0	4.80/9.60	50.0	4.80/9.60	50.0	
	Q > 0	4.80/9.60	50.0	4.80/9.60	50.0	
Other: Specify ____ (dBm)	I > 0					
	I > Q					
	I + Q > 0					
	Q > 0					
Other: Specify ____ (dBm)	I > 0					
	I > Q					
	I + Q > 0					
	Q > 0					
-75 dBm	I > 0	4.898/9.48	51.7	4.16/9.60	43.3	
	I > Q	4.77/9.54	50.0	4.16/9.60	43.3	Increased Noise both Detectors SDM
	I + Q > 0	5.088/9.54	53.3	4.48/9.60	46.7	
	Q > 0	4.898/9.48	51.7	4.77/9.54	50.0	02:10 (00:10 elapsed)

TEST Continued next page.

STEP-STRESS TEST DATA SHEET (CONTINUED)

UUT Serial Number (enter MSN): -100/349 Test Date: 11-27-91

STEP-STRESS Level (enter 0 - 10): 4

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UUT PERFORMANCE TEST DATA CONTINUED

DIGITAL OUTPUT TEST: Continued. (Refer to Procedure on previous page) Started 02:39

Channel 50: Settings: Synth Sig (J7 & J9) = 684 MHz; Rev Sig (J8) = 370.35 MHz at 0 to -75 dBm

Rev Sig Input	I & Q Bits	Detector 1 t (msec) T (msec)	Detector 1 Duty Cycle (percent)	Detector 2 t (msec) T (msec)	Detector 2 Duty Cycle (percent)	Observations
0 dBm	I > 0	4.77/9.54	50.0	4.77/9.54	50.0	
	I > Q	4.77/9.54	50.0	4.929/9.54	51.7	
	I + Q > 0	4.77/9.54	50.0	4.77/9.54	50.0	
	Q > 0	4.617/9.54	48.4	4.77/9.54	50.0	
Other: Specify (dBm)	I > 0					
	I > Q					
	I + Q > 0					
	Q > 0					
Other: Specify (dBm)	I > 0					
	I > Q					
	I + Q > 0					
	Q > 0					
-75 dBm	I > 0	4.924/9.54	51.6	4.452/9.54	46.7	
	I > Q	4.77/9.54	50.0	4.134/9.54	43.3	
	I + Q > 0	4.924/9.54	51.6	4.611/9.54	48.3	
	Q > 0	4.77/9.54	50.0	4.929/9.54	51.7	

End TEST: 02:48 (TIME HR:MIN) (elapsed 00:09) (ELAPSED DIGITAL TEST 00:19)

TEST continued next page

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STEP-STRESS TEST DATA SHEET (CONTINUED)

UUT Serial Number (enter MSN): -110/349 Test Date: 11-27-91

STEP-STRESS Level (enter 0 - 10): 4

686 92466 TEST

UUT PERFORMANCE TEST DATA CONTINUED

RADIO FREQUENCY OUTPUT TEST: At Dwell; Set UUT Frequency Word Input to Channel 50. Record the Synthesizer Mixer Port Output Frequency & Power. Repeat with settings for Channels 35, 18, and 00 at this STEP-STRESS Level.

Start TEST: 02:13 (TIME HR:MIN)

Channel	Synthesizer 1 (J5) Frequency (MHz)	Synthesizer 1 (J5) Power* (dBm)	Synthesizer 2 (J12) Frequency (MHz)	Synthesizer 2 (J12) Power* (dBm)	Observation *account for cable losses (See Step 0)
50 (hex)	642.46	-29.2	631.14	-20.7 unleveled	Synth 1 has low outputs power. Looks like Synth 1/a freq output to PLL is too low in power. Both synths pulled off frequency by voltages applied. Loosing lock during hopping.
35 (hex)	848.45	-2.0 (Good calibration)	846.64	+13.4 (Good output)	
18 (hex)	776.30	-0.4	768.83	+10.8	
00 (hex)	847.97	-2.9	845.94	+10.0	

SEE PHOTOS

Additional Testing (OPTIONAL); RADIO FREQUENCY OUTPUT TEST: At Dwell; Set UUT Frequency Word Input at Channel 50 thru Channel 00 and measure Synthesizer Mixer Port Output Power at each Frequency.

ATTACH the Data Printout (copy) to this STEP-STRESS TEST DATA SHEET. Label attachment with UUT Serial Number & STREP-STRESS Level. Tester Name & Date. ATTACHMENT ✓ (Check here)

End TEST: 02:39 (TIME HR:MIN) (00:26 elapsed)

STEP-STRESS LEVEL DATA CONTINUED

TEMPERATURE STEP-STRESS: The Dwell will have a duration of 1-hour at this STEP-STRESS Level.

(Dwell time 01:00 elapsed) End DWELL: 02:58 (TIME HR:MIN)

END DAY 2

STEP-STRESS LEVEL COMPLETE

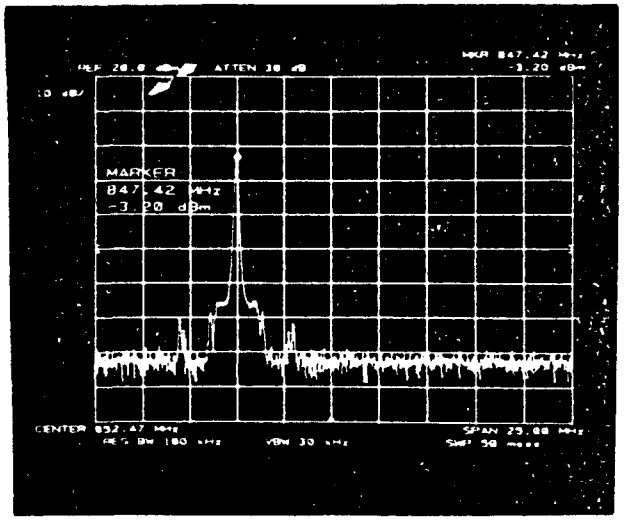
STEP-STRESS TEST DATA SHEET (CONTINUED)

UUT Serial Number (enter MSN): -100/349 Test Date: 11-27-91

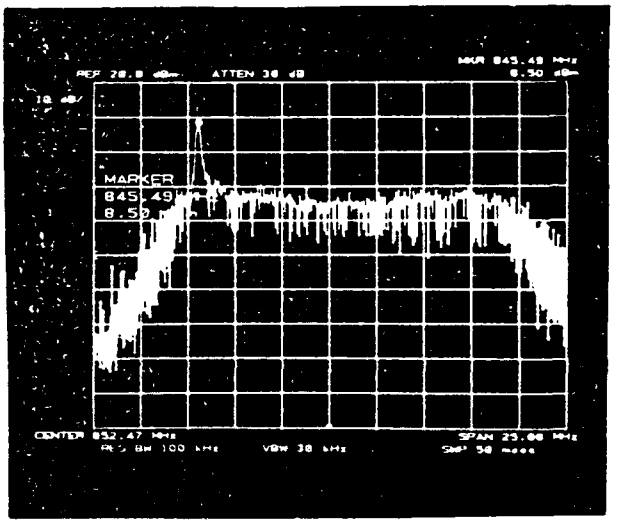
STEP-STRESS Level (enter 0 - 10): 4

GSG 92466 TEST

UUT PERFORMANCE TEST DATA CONTINUED

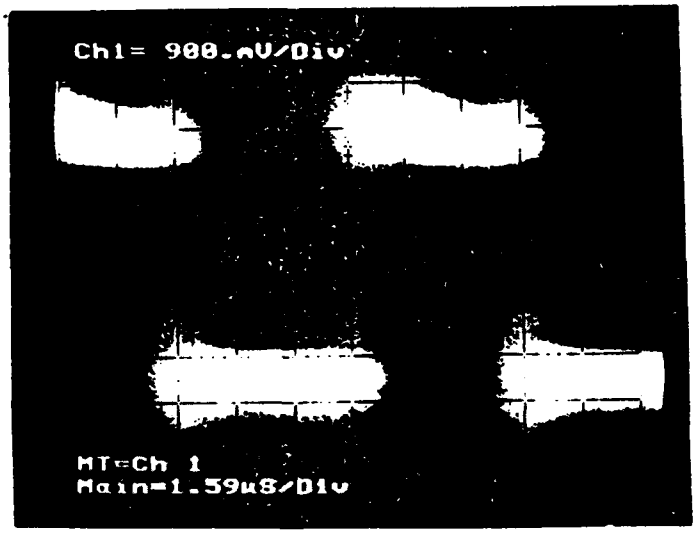


Synthesizer 1 (J5) Output for Channel 00
Shown is output off frequency with low output power.



Synthesizer 2 (J12) Output for Channel 00
Shown is partial unlock and sweeping to regain lock.

[Frequency should be at 921 MHz with power level > +9 dBm (cable loss is 1 dB)]



Detector 1 I + Q > 0 Output Bit Channel 00
Shown for -75 dBm Rcv Signal input, duty cycle is 53.3%

TRIAL TEST RUN

Sheet 4B of 4

FULL PRINT-OUT OF Power Output and Frequency [redacted] 100 ~~102~~ Ser. # 349

Power at J5 is-62.6 dBm @ 684.0 MHz (Spec=+9dBm minimum).
Power at J5 is-62.4 dBm @ 687.0 MHz (Spec=+9dBm minimum).
Power at J5 is-62.2 dBm @ 690.0 MHz (Spec=+9dBm minimum).
Power at J5 is-62.4 dBm @ 693.0 MHz (Spec=+9dBm minimum).
Power at J5 is-64.8 dBm @ 696.0 MHz (Spec=+9dBm minimum).
Power at J5 is-60.8 dBm @ 699.0 MHz (Spec=+9dBm minimum).
Power at J5 is-61.5 dBm @ 702.0 MHz (Spec=+9dBm minimum).
Power at J5 is-66.1 dBm @ 705.0 MHz (Spec=+9dBm minimum).
Power at J5 is-63.9 dBm @ 708.0 MHz (Spec=+9dBm minimum).
Power at J5 is-64.4 dBm @ 711.0 MHz (Spec=+9dBm minimum).
Power at J5 is-62.9 dBm @ 714.0 MHz (Spec=+9dBm minimum).
Power at J5 is-64.0 dBm @ 717.0 MHz (Spec=+9dBm minimum).
Power at J5 is-64.8 dBm @ 720.0 MHz (Spec=+9dBm minimum).
Power at J5 is-61.1 dBm @ 723.0 MHz (Spec=+9dBm minimum).
Power at J5 is-62.9 dBm @ 726.0 MHz (Spec=+9dBm minimum).
Power at J5 is-63.6 dBm @ 729.0 MHz (Spec=+9dBm minimum).
Power at J5 is-61.1 dBm @ 732.0 MHz (Spec=+9dBm minimum).
Power at J5 is-62.1 dBm @ 735.0 MHz (Spec=+9dBm minimum).
Power at J5 is-61.3 dBm @ 738.0 MHz (Spec=+9dBm minimum).
Power at J5 is-63.4 dBm @ 741.0 MHz (Spec=+9dBm minimum).
Power at J5 is-62.5 dBm @ 744.0 MHz (Spec=+9dBm minimum).
Power at J5 is-62.7 dBm @ 747.0 MHz (Spec=+9dBm minimum).
Power at J5 is-62.4 dBm @ 750.0 MHz (Spec=+9dBm minimum).
Power at J5 is-67.1 dBm @ 753.0 MHz (Spec=+9dBm minimum).
Power at J5 is-63.0 dBm @ 756.0 MHz (Spec=+9dBm minimum).
Power at J5 is-63.2 dBm @ 759.0 MHz (Spec=+9dBm minimum).
Power at J5 is-59.4 dBm @ 762.0 MHz (Spec=+9dBm minimum).
Power at J5 is-60.5 dBm @ 765.0 MHz (Spec=+9dBm minimum).
Power at J5 is-62.4 dBm @ 768.0 MHz (Spec=+9dBm minimum).
Power at J5 is-62.3 dBm @ 771.0 MHz (Spec=+9dBm minimum).
Power at J5 is-62.5 dBm @ 774.0 MHz (Spec=+9dBm minimum).
Power at J5 is-63.0 dBm @ 777.0 MHz (Spec=+9dBm minimum).
Power at J5 is-63.5 dBm @ 825.0 MHz (Spec=+9dBm minimum).
Power at J5 is-63.0 dBm @ 828.0 MHz (Spec=+9dBm minimum).
Power at J5 is-62.2 dBm @ 831.0 MHz (Spec=+9dBm minimum).
Power at J5 is-62.8 dBm @ 834.0 MHz (Spec=+9dBm minimum).
Power at J5 is-65.3 dBm @ 837.0 MHz (Spec=+9dBm minimum).
Power at J5 is-61.2 dBm @ 882.0 MHz (Spec=+9dBm minimum).
Power at J5 is-62.7 dBm @ 885.0 MHz (Spec=+9dBm minimum).
Power at J5 is-59.8 dBm @ 888.0 MHz (Spec=+9dBm minimum).
Power at J5 is-58.4 dBm @ 891.0 MHz (Spec=+9dBm minimum).
Power at J5 is-60.5 dBm @ 894.0 MHz (Spec=+9dBm minimum).
Power at J5 is-66.8 dBm @ 897.0 MHz (Spec=+9dBm minimum).
Power at J5 is-62.0 dBm @ 900.0 MHz (Spec=+9dBm minimum).
Power at J5 is-61.0 dBm @ 903.0 MHz (Spec=+9dBm minimum).
Power at J5 is-62.8 dBm @ 906.0 MHz (Spec=+9dBm minimum).
Power at J5 is-62.1 dBm @ 909.0 MHz (Spec=+9dBm minimum).
Power at J5 is-62.6 dBm @ 912.0 MHz (Spec=+9dBm minimum).
Power at J5 is-61.0 dBm @ 915.0 MHz (Spec=+9dBm minimum).
Power at J5 is-63.6 dBm @ 918.0 MHz (Spec=+9dBm minimum).
Power at J5 is-63.2 dBm @ 921.0 MHz (Spec=+9dBm minimum).

STEP-STRESS Level 4
11-27-91
A.D. Mueller
GSC 92466 TEST

TRIAL TEST RUN

Sheet 4C of 4

FULL PRINT-OUT OF Power Output and Frequency [redacted] 100 ~~102~~ Ser. # 349

Power at J12 is-62.1 dBm @ 684.0 MHz (Spec=+9dBm minimum).
Power at J12 is-63.8 dBm @ 687.0 MHz (Spec=+9dBm minimum).
Power at J12 is-61.4 dBm @ 690.0 MHz (Spec=+9dBm minimum).
Power at J12 is-61.8 dBm @ 693.0 MHz (Spec=+9dBm minimum).
Power at J12 is-62.6 dBm @ 696.0 MHz (Spec=+9dBm minimum).
Power at J12 is-66.0 dBm @ 699.0 MHz (Spec=+9dBm minimum).
Power at J12 is-60.9 dBm @ 702.0 MHz (Spec=+9dBm minimum).
Power at J12 is-63.6 dBm @ 705.0 MHz (Spec=+9dBm minimum).
Power at J12 is-62.4 dBm @ 708.0 MHz (Spec=+9dBm minimum).
Power at J12 is-64.0 dBm @ 711.0 MHz (Spec=+9dBm minimum).
Power at J12 is-63.1 dBm @ 714.0 MHz (Spec=+9dBm minimum).
Power at J12 is-63.4 dBm @ 717.0 MHz (Spec=+9dBm minimum).
Power at J12 is-64.0 dBm @ 720.0 MHz (Spec=+9dBm minimum).
Power at J12 is-63.9 dBm @ 723.0 MHz (Spec=+9dBm minimum).
Power at J12 is-69.3 dBm @ 726.0 MHz (Spec=+9dBm minimum).
Power at J12 is-64.2 dBm @ 729.0 MHz (Spec=+9dBm minimum).
Power at J12 is-61.3 dBm @ 732.0 MHz (Spec=+9dBm minimum).
Power at J12 is-60.1 dBm @ 735.0 MHz (Spec=+9dBm minimum).
Power at J12 is-61.4 dBm @ 738.0 MHz (Spec=+9dBm minimum).
Power at J12 is-63.8 dBm @ 741.0 MHz (Spec=+9dBm minimum).
Power at J12 is-62.3 dBm @ 744.0 MHz (Spec=+9dBm minimum).
Power at J12 is-64.5 dBm @ 747.0 MHz (Spec=+9dBm minimum).
Power at J12 is-61.1 dBm @ 750.0 MHz (Spec=+9dBm minimum).
Power at J12 is-65.3 dBm @ 753.0 MHz (Spec=+9dBm minimum).
Power at J12 is-61.9 dBm @ 756.0 MHz (Spec=+9dBm minimum).
Power at J12 is-64.4 dBm @ 759.0 MHz (Spec=+9dBm minimum).
Power at J12 is-59.5 dBm @ 762.0 MHz (Spec=+9dBm minimum).
Power at J12 is-62.2 dBm @ 765.0 MHz (Spec=+9dBm minimum).
Power at J12 is-63.2 dBm @ 768.0 MHz (Spec=+9dBm minimum).
Power at J12 is-61.2 dBm @ 771.0 MHz (Spec=+9dBm minimum).
Power at J12 is-66.8 dBm @ 774.0 MHz (Spec=+9dBm minimum).
Power at J12 is-63.4 dBm @ 777.0 MHz (Spec=+9dBm minimum).
Power at J12 is-59.9 dBm @ 825.0 MHz (Spec=+9dBm minimum).
Power at J12 is-65.5 dBm @ 828.0 MHz (Spec=+9dBm minimum).
Power at J12 is-61.5 dBm @ 831.0 MHz (Spec=+9dBm minimum).
Power at J12 is-61.5 dBm @ 834.0 MHz (Spec=+9dBm minimum).
Power at J12 is-62.6 dBm @ 837.0 MHz (Spec=+9dBm minimum).
Power at J12 is-62.8 dBm @ 882.0 MHz (Spec=+9dBm minimum).
Power at J12 is-61.3 dBm @ 885.0 MHz (Spec=+9dBm minimum).
Power at J12 is-63.9 dBm @ 888.0 MHz (Spec=+9dBm minimum).
Power at J12 is-60.7 dBm @ 891.0 MHz (Spec=+9dBm minimum).
Power at J12 is-60.2 dBm @ 894.0 MHz (Spec=+9dBm minimum).
Power at J12 is-63.2 dBm @ 897.0 MHz (Spec=+9dBm minimum).
Power at J12 is-62.2 dBm @ 900.0 MHz (Spec=+9dBm minimum).
Power at J12 is-62.0 dBm @ 903.0 MHz (Spec=+9dBm minimum).
Power at J12 is-62.7 dBm @ 906.0 MHz (Spec=+9dBm minimum).
Power at J12 is-61.5 dBm @ 909.0 MHz (Spec=+9dBm minimum).
Power at J12 is-63.1 dBm @ 912.0 MHz (Spec=+9dBm minimum).
Power at J12 is-61.4 dBm @ 915.0 MHz (Spec=+9dBm minimum).
Power at J12 is-60.4 dBm @ 918.0 MHz (Spec=+9dBm minimum).
Power at J12 is-61.6 dBm @ 921.0 MHz (Spec=+9dBm minimum).

STEP-STRESS Level 4
11-27-91
A.D. Mueller
GSC 92466 TEST

STEP-STRESS TEST DATA SHEET

Sheet 1 of 4

UUT Serial Number (enter MSN): -100/349 Test Date: 11-27-91

Tester: (Name & stamp below)

STEP-STRESS Level (enter 0 - 10): 4 Repeated L.D. Mueller (ESS 92466 TEST)

Begin DAY # 3

STEP-STRESS LEVEL DATA

TEMPERATURE STEP-STRESS: Ramp Chamber Temperature to STEP-STRESS Level; Stabilize, and Start Dwell at STEP-STRESS Level.

Begin RAMP: 12:40 (TIME HR:MIN) Repeat Level 4 of DAY # 2 Start DWELL: 13:10 (TIME HR:MIN)

STEP-STRESS Level Chamber Air Temperature: +93 (°C) (Chamber thermocouple reading) TE2 +91.3°C Flange Temperature: +98.1 (°C) (Thermocouple reading)

STEP-STRESS Level Component Temperature: +103.9 (°C) (refer to Appendix D Table) Avg +1.9°C/-2.3°C

VOLTAGE STEP-STRESS: During Temperature Ramp; Increment Voltage to STEP-STRESS Level. (Record settings below)

Supply Voltages: + 5 Volts dc: +5.80 (Vdc) - 5 Volts dc: -5.80 (Vdc)

+15 Volts dc: +16.20 (Vdc) -15 Volts dc: -16.20 (Vdc)

Aux. Constant - 5 Volts dc Setting: -5.097 (Vdc) 34-AV # VA.1 Received from CLT

UUT PERFORMANCE TEST DATA TESTS MAY BE PERFORMED IN ANY ORDER

UUT CURRENT TEST: At Dwell; Set UUT Frequency Word, Synthesized Signal, & Received (0 dBm) Signal Inputs for Channel 00. Record UUT Currents for this STEP-STRESS Level.

Start TEST: OMIT (TIME HR:MIN) SDM

Settings: Freq Word (J1-01 & J3-01) = C1100; Synth Sig (J7 & J9) = 921 MHz; Rcv Sig (J8) = 607.35 MHz at 0 dBm

UUT Currents: + 5 Volts dc: _____ (mA) - 5 Volts dc: _____ (mA)

+15 Volts dc: _____ (mA) -15 Volts dc: _____ (mA)

End TEST: OMIT (TIME HR:MIN)

TEST continued next page

STEP-STRESS TEST DATA SHEET (CONTINUED)

Sheet 2 of 4

UUT Serial Number (enter MSN): -100/349 Test Date: 11-27-91 (ESS 92466 TEST) SDM

STEP-STRESS Level (enter 0 - 10): 4 Repeated

UUT PERFORMANCE TEST DATA CONTINUED

UUT DIGITAL OUTPUT TEST: At Dwell; Set UUT Synthesized Signal and Received Signal Inputs for Channel 00. Decrease Received Signal Input from 0 dBm to -75 dBm and record Duty Cycle (t/T) for each UUT Digital Output. Repeat with setting for Channels 50 at this STEP-STRESS Level.

Start TEST: MONITORED 13:11 (TIME HR:MIN)

Channel 00: Settings: Synth Sig (J7 & J9) = 921 MHz; Rcv Sig (J8) = 607.35 MHz at 0 to -75 dBm

Rcv Sig Input	I & Q Bits	Detector 1 t (usec) T (usec)	Detector 1 Duty Cycle (percent)	Detector 2 t (usec) T (usec)	Detector 2 Duty Cycle (percent)	Observations
0 dBm	I > 0					
	I > Q					
	I + Q > 0					
	Q > 0					
Other: Specify ____ (dBm)	I > 0					
	I > Q					
	I + Q > 0					
	Q > 0					
Other: Specify ____ (dBm)	I > 0					
	I > Q					
	I + Q > 0					
	Q > 0					
-75 dBm	I > 0	Detectors compare				
	I > Q	to previous DAY # 2				
	I + Q > 0	data at 02:10 11-27-91				
	Q > 0	for -75 dBm input SDM				

TEST Continued next page.

STEP-STRESS TEST DATA SHEET (CONTINUED)

ESS 92466 TEST

UUT Serial Number (enter MSN): -100/349 Test Date: 11-27-91

STEP-STRESS Level (enter 0 - 10): 4 Repeated

UUT PERFORMANCE TEST DATA CONTINUED

DIGITAL OUTPUT TEST: Continued. (Refer to Procedure on previous page)

Channel 50: Settings: Synth Sig (J7 & J9) = 684 MHz; Rcv Sig (J8) = 370.35 MHz at 0 to -75 dBm

Rcv Sig Input	I & Q -Bits	Detector 1 T (usec)	Detector 1 Duty Cycle (percent)	Detector 2 T (usec)	Detector 2 Duty Cycle (percent)	Observations
0 dBm	I > 0					
	I > Q					
	I + Q > 0					
	Q > 0					
Other: Specify (dBm)	I > 0					
	I > Q					
	I + Q > 0					
	Q > 0					
Other: Specify (dBm)	I > 0					
	I > Q					
	I + Q > 0					
	Q > 0					
-75 dBm	I > 0					
	I > Q					
	I + Q > 0					
	Q > 0					

Didn't Retest OMITTED J.D. Mueller

End TEST: 13:18 (TIME HR:MIN)

TEST continued next page

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STEP-STRESS TEST DATA SHEET (CONTINUED)

ESS 92466 TEST

UUT Serial Number (enter MSN): -100/349 Test Date: 11-27-91

STEP-STRESS Level (enter 0 - 10): 4 Repeated

SDA

UUT PERFORMANCE TEST DATA CONTINUED

RADIO FREQUENCY OUTPUT TEST: At Dwell: Set UUT Frequency Word Input to Channel 50. Record the Synthesizer Mixer Port Output Frequency & Power. Repeat with settings for Channels 35, 18, and 00 at this STEP-STRESS Level.

Start TEST: MONITORED ONLY 13:20 (TIME HR:MIN)

Channel	Synthesizer 1 (J5) Frequency (MHz)	Synthesizer 1 (J5) Power* (dBm)	Synthesizer 2 (J12) Frequency (MHz)	Synthesizer 2 (J12) Power* (dBm)	Observation *account for cable losses
50 (684)					
35 (719)	Same Conditions				
18 (873)	Still Hold from DAY #2				
00 (911)	Data Taken 02:39 11-27-91				

Additional Testing (OPTIONAL): RADIO FREQUENCY OUTPUT TEST — At Dwell: Set UUT Frequency Word Input at Channel 50 thru Channel 00 and measure Synthesizer Mixer Port Output Power at each Frequency.

ATTACH the Data Printout (copy) to this STEP-STRESS TEST DATA SHEET. Label attachment with UUT Serial Number & STREP-STRESS Level. Tester Name & Date. ATTACHMENT (Check here)

End TEST: 13:38 (TIME HR:MIN)

STEP-STRESS LEVEL DATA CONTINUED

TEMPERATURE STEP-STRESS: The Dwell will have a duration of 1-hour at this STEP-STRESS Level.

End DWELL: 13:38 (TIME HR:MIN)

SEE ALSO DAY #3 PLOT OF TEMP:

At 13:38 Reduced Voltage Stresses to Level 0 while maintaining temperature stress @ Level 4. Dwell to 14:20 at these conditions to observe thermocouples & heat contribution of components as the result of voltage stress. Also noticed at 13:50 11-27-91 that the Synth J5 remained off frequency even with -15V back to normal. The J12 Synth however recovered fully, although noisy, returning to CH 00 @ 921 MHz J.D. Mueller

STEP-STRESS LEVEL COMPLETE

STEP-STRESS TEST DATA SHEET

UUT Serial Number (enter MSN): -100/349 Test Date: 11-27-91

Tester: (Name & stamp below) A.D. Mueller

STEP-STRESS Level (enter 0 - 10): 5

INCREASED VOLTAGES FROM LEVEL 0 TO LEVEL 4 @ 14:20 prior to proceeding to LEVEL 5 A.D. Mueller

STEP-STRESS LEVEL DATA

TEMPERATURE STEP-STRESS: Ramp Chamber Temperature to STEP-STRESS Level; Stabilize, and Start Dwell at STEP-STRESS Level.

Begin RAMP: 14:32 (TIME HR:MIN) assume 30 minute dwell Start DWELL: 15:02 (TIME HR:MIN)

STEP-STRESS Level Chamber Air Temperature: +101 (°C) (Chamber thermocouple reading) TC 8 98.9°C ±0.1

Flange Temperature: +106 (°C) (Thermocouple reading) TC 1

STEP-STRESS Level Component Temperature: Ave +112.2 (°C) (refer to Appendix D Table) +2.1°C / -2.4°C

VOLTAGE STEP-STRESS: During Temperature Ramp: Increment Voltage to STEP-STRESS Level. (Record settings below)

Supply Voltages: + 5 Volts dc: +6.00 (Vdc) - 5 Volts dc: -6.00 (Vdc)

+15 Volts dc: +16.50 (Vdc) -15 Volts dc: -16.50 (Vdc)

Aux. Constant - 5 Volts dc Setting: -5.097 (Vdc) Removed A4-R4 & VR1 (-Vreg.)

UUT PERFORMANCE TEST DATA TESTS MAY BE PERFORMED IN ANY ORDER

UUT CURRENT TEST: At Dwell: Set UUT Frequency Word, Synthesized Signal, & Received (0 dBm) Signal Inputs for Channel 00. Record UUT Currents for this STEP-STRESS Level.

Start TEST: OMITTED (TIME HR:MIN) CDM

Settings: Freq Word (J1-01 & J3-01) = CH 00: Synth Sig (J7 & J9) = 921 MHz; Rcv Sig (J8) = 607.35 MHz at 0 dBm

UUT Currents: + 5 Volts dc: _____ (mA) - 5 Volts dc: _____ (mA)

+15 Volts dc: _____ (mA) -15 Volts dc: _____ (mA)

End TEST: OMIT (TIME HR:MIN)

TEST continued next page

STEP-STRESS TEST DATA SHEET (CONTINUED)

UUT Serial Number (enter MSN): -100/349 Test Date: 11-27-91

STEP-STRESS Level (enter 0 - 10): 5

UUT PERFORMANCE TEST DATA CONTINUED

UUT DIGITAL OUTPUT TEST: At Dwell: Set UUT Synthesized Signal and Received Signal Inputs for Channel 00. Decrease Received Signal Input from 0 dBm to -75 dBm and record Duty Cycle (t/T) for each UUT Digital Output. Repeat with setting for Channels 50 at this STEP-STRESS Level.

Start TEST: 1540 MONITOR ONLY (TIME HR:MIN)

Channel 00: Settings: Synth Sig (J7 & J9) = 921 MHz; Rcv Sig (J8) = 607.35 MHz at 0 to -75 dBm

Rcv Sig Input	I & Q -Bits	Detector 1 t (usec) / T (usec)	Detector 1 Duty Cycle (percent)	Detector 2 t (usec) / T (usec)	Detector 2 Duty Cycle (percent)	Observations
0 dBm	I > 0					
	I > Q					
	I + Q > 0					
	Q > 0					
Other: Specify (dBm)	I > 0					
	I > Q					
	I + Q > 0		OMIT TEST OF CH. 00 OBSERVE CH 50 ONLY			
	Q > 0					
Other: Specify (dBm)	I > 0					
	I > Q					
	I + Q > 0					
	Q > 0					
-75 dBm	I > 0					
	I > Q					
	I + Q > 0					
	Q > 0					

TEST Continued next page

STEP-STRESS TEST DATA SHEET (CONTINUED)

UUT Serial Number (enter MSN): -100/349 Test Date: 11-27-91

STEP-STRESS Level (enter 0 - 10): 5

GSS 92466 TEST

UUT PERFORMANCE TEST DATA CONTINUED

DIGITAL OUTPUT TEST: Continued. (Refer to Procedure on previous page)

Channel 50: Settings: Synth Sig (J7 & J9) = 684 MHz; Rcv Sig (J8) = 370.35 MHz at 0 to -75 dBm

Rcv Sig Input	I & Q Bits	Detector 1 t (usec) T (sec)	Detector 1 Duty Cycle (percent)	Detector 2 t (usec) T (usec)	Detector 2 Duty Cycle (percent)	Observations
0 dBm	I > 0					
	I > Q	All Detector 1 & 2 Bits				
	I + Q > 0	present & stable at				
	Q > 0	0dBm CH 50				
Other: Specify (dBm)	I > 0					
	I > Q					
	I + Q > 0					
	Q > 0					
Other: Specify (dBm)	I > 0					
	I > Q					
	I + Q > 0					
	Q > 0					
-75 dBm	I > 0	Duty cycle's of Detects 1&2				
	I > Q	Bits changing ± 2 5%				
	I + Q > 0	at Level 5. Noise increases				
	Q > 0	greatly, but all bits still present & stable.				

A.D. Mueller 11-27-91

End TEST: 15:17 (TIME HR:MIN)

TEST continued next page

TRIAL TEST RUN

STEP-STRESS TEST DATA SHEET (CONTINUED)

UUT Serial Number (enter MSN): -100/349 Test Date: 11-27-91

STEP-STRESS Level (enter 0 - 10): 5

GSS 92466 TEST

UUT PERFORMANCE TEST DATA CONTINUED

RADIO FREQUENCY OUTPUT TEST: At Dwell: Set UUT Frequency Word Input to Channel 50. Record the Synthesizer Mixer Port Output Frequency & Power. Repeat with settings for Channels 35, 18, and 00 at this STEP-STRESS Level.

Start TEST: 15:19 (TIME HR:MIN) MONITOR CH 50 ONLY. BOTH SYNTHESIZERS.

Channel	Synthesizer 1 (J5) Frequency (MHz)	Synthesizer 1 (J5) Power* (dBm)	Synthesizer 2 (J12) Frequency (MHz)	Synthesizer 2 (J12) Power* (dBm)	Observation *account for cable losses
50 (684)	Monitored CH 50 only. ~~Both~~ Synthesizer #1 is well				
35 (779)	below 684 MHz (@ 650 MHz) but signal is present.				
18 (705) ONLY	Voltage stress has pulled off frequency. Power out				
00 (681)	remains low. Synthesizer #2 has good power out,				
	but frequency is also off & unstable. Would				
	likely lock at reduced voltage stress as				
	observed before				

A.D. Mueller 11-27-91

Additional Testing (OPTIONAL): **RADIO FREQUENCY OUTPUT TEST** At Dwell: Set UUT Frequency Word Input at Channel 50 thru Channel 00 and measure Synthesizer Mixer Port Output Power at each Frequency.

ATTACH the Data Printout (copy) to this STEP-STRESS TEST DATA SHEET. Label attachment with UUT Serial Number & STREP-STRESS Level. Tester Name & Date. ATTACHMENT (Check here)

End TEST: 15:35 (TIME HR:MIN)

STEP-STRESS LEVEL DATA CONTINUED

TEMPERATURE STEP-STRESS: The Dwell will have a duration of 1-hour at this STEP-STRESS Level.

End DWELL: 15:36 (TIME HR:MIN)

WILL MAINTAIN LEVEL 5 VOLTAGE STRESS AS WE RAMP BACK TO TEMPERATURE REFERENCE LEVEL 0.

STEP-STRESS LEVEL COMPLETE

STEP-STRESS TEST DATA SHEET

UUT Serial Number (enter MSN): -100/349 Test Date: 11-27-91

Tester: (Name & stamp below)

STEP-STRESS Level (enter 0 - 10): 0 A.D. Mueller GSC 92466 TEST

DAY #3 FINAL REF TEST

Between 15:36 and 16:46 investigated effects of Load & Voltage vs. Load 0 Temps to determine heat contributions of Voltage Stresses SDM

STEP-STRESS LEVEL DATA

TEMPERATURE STEP-STRESS: Ramp Chamber Temperature to STEP-STRESS Level; Stabilize, and Start Dwell at STEP-STRESS Level.

Begin RAMP: 1646 (TIME HR:MIN) (Reduced Voltage stress from Level 5 to Level 0) Start DWELL: 17:19 (TIME HR:MIN)

STEP-STRESS Level Chamber Air Temperature: +61 (°C) (Chamber thermocouple reading) TC1=+60.5°C Flange Temperature: +65.8 (°C) (Thermocouple reading)

STEP-STRESS Level Component Temperature: +70.5 (°C) (refer to Appendix B Table) +1.4°C/-1.4°C

VOLTAGE STEP-STRESS: During Temperature Ramp; Increment Voltage to STEP-STRESS Level. (Record settings below)

Supply Voltages: +5 Volts dc: +5.00 (Vdc) -5 Volts dc: -5.00 (Vdc)

+15 Volts dc: +15.00 (Vdc) -15 Volts dc: -15.00 (Vdc)

Aux. Constant - 5 Volts dc Setting: -6.097 (Vdc) A4-R18 VR1 Removed from CKT.

UUT PERFORMANCE TEST DATA TESTS MAY BE PERFORMED IN ANY ORDER

UUT CURRENT TEST: At Dwell; Set UUT Frequency Word, Synthesized Signal, & Received (0 dBm) Signal Inputs for Channel 00. Record UUT Currents for this STEP-STRESS Level.

Start TEST: 0015 (TIME HR:MIN) SDM

Settings: Freq Word (J1-01 & J3-01) = CH 00; Synth Sig (J7 & J9) = 921 MHz; Rcv Sig (J8) = 607.35 MHz at 0 dBm

UUT Currents: +5 Volts dc: _____ (mA) -5 Volts dc: _____ (mA)

+15 Volts dc: _____ (mA) -15 Volts dc: _____ (mA)

End TEST: 0017 (TIME HR:MIN)

TEST continued next page

STEP-STRESS TEST DATA SHEET (CONTINUED)

UUT Serial Number (enter MSN): -100/349 Test Date: 11-27-91 GSC 92466 TEST

STEP-STRESS Level (enter 0 - 10): 0 SDM

UUT PERFORMANCE TEST DATA CONTINUED

UUT DIGITAL OUTPUT TEST: At Dwell; Set UUT Synthesized Signal and Received Signal Inputs for Channel 00. Decrease Received Signal Input from 0 dBm to -75 dBm and record Duty Cycle (t/T) for each UUT Digital Output. Repeat with setting for Channels 50 at this STEP-STRESS Level.

Start TEST: MONITORED ONLY (TIME HR:MIN)

Channel 00: Settings: Synth Sig (J7 & J9) = 921 MHz; Rcv Sig (J8) = 607.35 MHz at 0 to -75 dBm

Rcv Sig Input	I & Q -Bits	Detector 1 t (usec) T (usec)	Detector 1 Duty Cycle (percent)	Detector 2 t (usec) T (usec)	Detector 2 Duty Cycle (percent)	Observations
0 dBm	I > 0					
	I > Q					
	I + Q > 0					
	Q > 0					
Other: Specify (dBm)	I > 0					
	I > Q					
	I + Q > 0					
	Q > 0					
Other: Specify (dBm)	I > 0					
	I > Q					
	I + Q > 0					
	Q > 0					
-75 dBm	I > 0	Both Detectors I & Q				
	I > Q	I & Q-Bits monitored				
	I + Q > 0	at -75 dBm input.				
	Q > 0	Observed to have returned to prior values as this Ref. Level 0				

TEST Continued next page.

STEP-STRESS TEST DATA SHEET (CONTINUED)

UUT Serial Number (enter MSN): -100/349 Test Date: 11-27-91 (656 92466 TEST)

STEP-STRESS Level (enter 0 - 10): 0 SDM

UUT PERFORMANCE TEST DATA CONTINUED

DIGITAL OUTPUT TEST: Continued. (Refer to Procedure on previous page)

Channel 50: Settings: Synth Sig (J7 & J9) = 684 MHz; Rcv Sig (J8) = 370.35 MHz at 0 to -75 dBm

Rcv Sig Input	I & Q Bits	Detector 1 Linear T (sec)	Detector 1 Duty Cycle (percent)	Detector 2 Linear T (usec)	Detector 2 Duty Cycle (percent)	Observations
0 dBm	I > 0					
	I > Q					
	I + Q > 0					
	Q > 0					
Other: Specify ____ (dBm)	I > 0					
	I > Q					
	I + Q > 0					
	Q > 0					
Other: Specify ____ (dBm)	I > 0					
	I > Q					
	I + Q > 0					
	Q > 0					
-75 dBm	I > 0	Check also CH 50 briefly. At -75dBm input.				
	I > Q					
	I + Q > 0	Both Detectors I & Q are within expected limits				SDMueller 11-27-91
	Q > 0					

End TEST: MONITORED ONLY (TIME HR:MIN)

TEST continued next page

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STEP-STRESS TEST DATA SHEET (CONTINUED)

UUT Serial Number (enter MSN): -100/349 Test Date: 11-27-91 (656 92466 TEST)

STEP-STRESS Level (enter 0 - 10): 0

UUT PERFORMANCE TEST DATA CONTINUED

RADIO FREQUENCY OUTPUT TEST: At Dwell: Set UUT Frequency Word Input to Channel 50. Record the Synthesizer Mixer Port Output Frequency & Power. Repeat with settings for Channels 35, 18, and 00 at this STEP-STRESS Level.

Start TEST: 17:20 (TIME HR:MIN)

Channel	Synthesizer 1 (J5) Frequency (MHz)	Synthesizer 1 (J5) Power* (dBm)	Synthesizer 2 (J12) Frequency (MHz)	Synthesizer 2 (J12) Power* (dBm)	Observation *account for cable losses
50 (684)	684.00	-15.7	684.01	+8.3	Cable Losses (dB) J5 J12
35 (729)	729.00	-10.9	729.04	+10.5	684 1.04 1.04
18 (825)	825.00	-9.8	825.06	+11.0	729 0.98 1.00
00 (921)	920.99	-7.7	920.99	+11.6	825 1.10 1.08
					921 1.18 1.14

Synth #1 has permanently obstructed. Output is on frequency but power is very low.

Additional Testing (OPTIONAL): **RADIO FREQUENCY OUTPUT TEST** At Dwell: Set UUT Frequency Word Input to Channel 50 thru Channel 00 and measure Synthesizer Mixer Port Output Power at each Frequency.

ATTACH the Data Printout (copy) to this STEP-STRESS TEST DATA SHEET. Label attachment with UUT Serial Number & STREP-STRESS Level. Tester Name & Date. ATTACHMENT ✓ (Check here)

End TEST: 17:36 (TIME HR:MIN) (Elapsed 00:16)

STEP-STRESS LEVEL DATA CONTINUED

TEMPERATURE STEP-STRESS: The Dwell will have a duration of 1-hour at this STEP-STRESS Level.

End DWELL: 17:36 (TIME HR:MIN)

STEP-STRESS LEVEL COMPLETE

TRIAL TEST RUN Sheet 4A of 4

FULL PRINT-OUT OF Power Output and Frequency [redacted] 100 ~~102~~ Ser. # 349

Power at J5 is-17.9 dBm @ 684.0 MHz (Spec=+9dBm minimum).
Power at J5 is-19.9 dBm @ 687.0 MHz (Spec=+9dBm minimum).
Power at J5 is-18.4 dBm @ 690.0 MHz (Spec=+9dBm minimum).
Power at J5 is-17.0 dBm @ 693.0 MHz (Spec=+9dBm minimum).
Power at J5 is-14.8 dBm @ 696.0 MHz (Spec=+9dBm minimum).
Power at J5 is-12.2 dBm @ 699.0 MHz (Spec=+9dBm minimum).
Power at J5 is-10.2 dBm @ 702.0 MHz (Spec=+9dBm minimum).
Power at J5 is-8.6 dBm @ 705.0 MHz (Spec=+9dBm minimum).
Power at J5 is-8.3 dBm @ 708.0 MHz (Spec=+9dBm minimum).
Power at J5 is-9.2 dBm @ 711.0 MHz (Spec=+9dBm minimum).
Power at J5 is-11.8 dBm @ 714.0 MHz (Spec=+9dBm minimum).
Power at J5 is-9.5 dBm @ 717.0 MHz (Spec=+9dBm minimum).
Power at J5 is-12.4 dBm @ 720.0 MHz (Spec=+9dBm minimum).
Power at J5 is-11.4 dBm @ 723.0 MHz (Spec=+9dBm minimum).
Power at J5 is-12.8 dBm @ 726.0 MHz (Spec=+9dBm minimum).
Power at J5 is-13.8 dBm @ 729.0 MHz (Spec=+9dBm minimum).
Power at J5 is-14.8 dBm @ 732.0 MHz (Spec=+9dBm minimum).
Power at J5 is-13.5 dBm @ 735.0 MHz (Spec=+9dBm minimum).
Power at J5 is-14.5 dBm @ 738.0 MHz (Spec=+9dBm minimum).
Power at J5 is-14.8 dBm @ 741.0 MHz (Spec=+9dBm minimum).
Power at J5 is-20.5 dBm @ 744.0 MHz (Spec=+9dBm minimum).
Power at J5 is-25.2 dBm @ 747.0 MHz (Spec=+9dBm minimum).
Power at J5 is-14.2 dBm @ 750.0 MHz (Spec=+9dBm minimum).
Power at J5 is-14.4 dBm @ 753.0 MHz (Spec=+9dBm minimum).
Power at J5 is-19.4 dBm @ 756.0 MHz (Spec=+9dBm minimum).
Power at J5 is-9.9 dBm @ 759.0 MHz (Spec=+9dBm minimum).
Power at J5 is-8.2 dBm @ 762.0 MHz (Spec=+9dBm minimum).
Power at J5 is-6.6 dBm @ 765.0 MHz (Spec=+9dBm minimum).
Power at J5 is-7.3 dBm @ 768.0 MHz (Spec=+9dBm minimum).
Power at J5 is-18.9 dBm @ 771.0 MHz (Spec=+9dBm minimum).
Power at J5 is-8.0 dBm @ 774.0 MHz (Spec=+9dBm minimum).
Power at J5 is-10.5 dBm @ 777.0 MHz (Spec=+9dBm minimum).
Power at J5 is-15.6 dBm @ 825.0 MHz (Spec=+9dBm minimum).
Power at J5 is-11.0 dBm @ 828.0 MHz (Spec=+9dBm minimum).
Power at J5 is-11.8 dBm @ 831.0 MHz (Spec=+9dBm minimum).
Power at J5 is-10.1 dBm @ 834.0 MHz (Spec=+9dBm minimum).
Power at J5 is-10.5 dBm @ 837.0 MHz (Spec=+9dBm minimum).
Power at J5 is-16.5 dBm @ 882.0 MHz (Spec=+9dBm minimum).
Power at J5 is-15.4 dBm @ 885.0 MHz (Spec=+9dBm minimum).
Power at J5 is-16.1 dBm @ 888.0 MHz (Spec=+9dBm minimum).
Power at J5 is-16.7 dBm @ 891.0 MHz (Spec=+9dBm minimum).
Power at J5 is-28.1 dBm @ 894.0 MHz (Spec=+9dBm minimum).
Power at J5 is-16.4 dBm @ 897.0 MHz (Spec=+9dBm minimum).
Power at J5 is-18.7 dBm @ 900.0 MHz (Spec=+9dBm minimum).
Power at J5 is-18.1 dBm @ 903.0 MHz (Spec=+9dBm minimum).
Power at J5 is-14.2 dBm @ 906.0 MHz (Spec=+9dBm minimum).
Power at J5 is-20.5 dBm @ 909.0 MHz (Spec=+9dBm minimum).
Power at J5 is-14.6 dBm @ 912.0 MHz (Spec=+9dBm minimum).
Power at J5 is-20.5 dBm @ 915.0 MHz (Spec=+9dBm minimum).
Power at J5 is-14.5 dBm @ 918.0 MHz (Spec=+9dBm minimum).
Power at J5 is-9.3 dBm @ 921.0 MHz (Spec=+9dBm minimum).

STEP-STRESS Level C
11-27-91
A.D. Mueller
GSG 92466 TEST

TRIAL TEST RUN Sheet 4B of 4

FULL PRINT-OUT OF Power Output and Frequency [redacted] 100 ~~102~~ Ser. # 349

Power at J12 is 3.4 dBm @ 684.0 MHz (Spec=+9dBm minimum).
Power at J12 is .8 dBm @ 687.0 MHz (Spec=+9dBm minimum).
Power at J12 is 3.4 dBm @ 690.0 MHz (Spec=+9dBm minimum).
Power at J12 is 3.0 dBm @ 693.0 MHz (Spec=+9dBm minimum).
Power at J12 is 3.3 dBm @ 696.0 MHz (Spec=+9dBm minimum).
Power at J12 is 2.7 dBm @ 699.0 MHz (Spec=+9dBm minimum).
Power at J12 is-1.3 dBm @ 702.0 MHz (Spec=+9dBm minimum).
Power at J12 is 5.8 dBm @ 705.0 MHz (Spec=+9dBm minimum).
Power at J12 is 1.7 dBm @ 708.0 MHz (Spec=+9dBm minimum).
Power at J12 is 6.7 dBm @ 711.0 MHz (Spec=+9dBm minimum).
Power at J12 is 6.1 dBm @ 714.0 MHz (Spec=+9dBm minimum).
Power at J12 is 5.9 dBm @ 717.0 MHz (Spec=+9dBm minimum).
Power at J12 is 5.7 dBm @ 720.0 MHz (Spec=+9dBm minimum).
Power at J12 is 4.4 dBm @ 723.0 MHz (Spec=+9dBm minimum).
Power at J12 is-.3 dBm @ 726.0 MHz (Spec=+9dBm minimum).
Power at J12 is 4.5 dBm @ 729.0 MHz (Spec=+9dBm minimum).
Power at J12 is 8.7 dBm @ 732.0 MHz (Spec=+9dBm minimum).
Power at J12 is 3.8 dBm @ 735.0 MHz (Spec=+9dBm minimum).
Power at J12 is 6.1 dBm @ 738.0 MHz (Spec=+9dBm minimum).
Power at J12 is 4.9 dBm @ 741.0 MHz (Spec=+9dBm minimum).
Power at J12 is-1.9 dBm @ 744.0 MHz (Spec=+9dBm minimum).
Power at J12 is 8.5 dBm @ 747.0 MHz (Spec=+9dBm minimum).
Power at J12 is 4.9 dBm @ 750.0 MHz (Spec=+9dBm minimum).
Power at J12 is 4.4 dBm @ 753.0 MHz (Spec=+9dBm minimum).
Power at J12 is 3.6 dBm @ 756.0 MHz (Spec=+9dBm minimum).
Power at J12 is 8.3 dBm @ 759.0 MHz (Spec=+9dBm minimum).
Power at J12 is-2.6 dBm @ 762.0 MHz (Spec=+9dBm minimum).
Power at J12 is 5.2 dBm @ 765.0 MHz (Spec=+9dBm minimum).
Power at J12 is 7.3 dBm @ 768.0 MHz (Spec=+9dBm minimum).
Power at J12 is 4.3 dBm @ 771.0 MHz (Spec=+9dBm minimum).
Power at J12 is 5.0 dBm @ 774.0 MHz (Spec=+9dBm minimum).
Power at J12 is 6.6 dBm @ 777.0 MHz (Spec=+9dBm minimum).
Power at J12 is 8.6 dBm @ 825.0 MHz (Spec=+9dBm minimum).
Power at J12 is 5.5 dBm @ 828.0 MHz (Spec=+9dBm minimum).
Power at J12 is 5.5 dBm @ 831.0 MHz (Spec=+9dBm minimum).
Power at J12 is-4.1 dBm @ 834.0 MHz (Spec=+9dBm minimum).
Power at J12 is-2.3 dBm @ 837.0 MHz (Spec=+9dBm minimum).
Power at J12 is 4.9 dBm @ 882.0 MHz (Spec=+9dBm minimum).
Power at J12 is 3.3 dBm @ 885.0 MHz (Spec=+9dBm minimum).
Power at J12 is 2.1 dBm @ 888.0 MHz (Spec=+9dBm minimum).
Power at J12 is 2.6 dBm @ 891.0 MHz (Spec=+9dBm minimum).
Power at J12 is 3.8 dBm @ 894.0 MHz (Spec=+9dBm minimum).
Power at J12 is 6.5 dBm @ 897.0 MHz (Spec=+9dBm minimum).
Power at J12 is 4.6 dBm @ 900.0 MHz (Spec=+9dBm minimum).
Power at J12 is 5.6 dBm @ 903.0 MHz (Spec=+9dBm minimum).
Power at J12 is 1.5 dBm @ 906.0 MHz (Spec=+9dBm minimum).
Power at J12 is 2.8 dBm @ 909.0 MHz (Spec=+9dBm minimum).
Power at J12 is .8 dBm @ 912.0 MHz (Spec=+9dBm minimum).
Power at J12 is 3.0 dBm @ 915.0 MHz (Spec=+9dBm minimum).
Power at J12 is 4.8 dBm @ 918.0 MHz (Spec=+9dBm minimum).
Power at J12 is 9.0 dBm @ 921.0 MHz (Spec=+9dBm minimum).

STEP-STRESS Level C
11-27-91
A.D. Mueller
GSG 92466 TEST

TEST EQUIPMENT & CALIBRATION LOG

Maintain Log for testing conducted 12-16-91 (date) through 12-17-91 (date):

Item	DESCRIPTION	Manuf. & Part No.	ID NUMBER	LAST CAL*	CAL* DUE	Item Notes
01	T/R Test Station	HAC; SPECIAL	G-132043		NCR	F-A15223
02	Control Panel	HAC; SPECIAL	G-132290		NCR	
03	Signal Generator	HP; 8660C	G-132009	10/28/91	07/20/92	
04	Auxiliary Section	HP; 86631B	G-132010		NCR	P/o Item 3
05	RF Section	HP; 86603A	G-132011	10/28/91	07/20/92	P/o Item 3
06	Spectrum Analyzer	HP; 8568A w/ Opt E16	G-132082	12/11/91	10/30/92	
07	FET Probe	HP; 1120A	———			NOT USED
08	Power Meter	HP; 436A	———			NOT USED
09	Power Sensor	HP; 8482A	———			NOT USED
10	Oscilloscope	HP; 1980B	G-132049	09/24/91	08/11/92	
11	Digital Multimeter	SystronDonner; 7344A	———			NOT USED
12	Digital Multimeter	HP; 3478A	H-A53624	09/06/91	06/25/92	
13	Power Splitter	MiniCkts; ZFSC-2-5	NONE		NCR	
14	Power Splitter	MiniCkts; ZFSC-2-5	NONE		NCR	
15	Reg. Power Supply	Lambda; LP-531-FM	G-132292		NCR	+15V Supply
16	Reg. Power Supply	Lambda; LP-531-FM	P/o Item 15		NCR	-15V Supply
17	Reg. Power Supply	Lambda; LP-530-FM	G-132291		NCR	+5V Supply
18	Reg. Power Supply	Lambda; LP-520-FM	P/o Item 17		NCR	-5V Supply
19	Computer	HP; 9845B	G-128030		NCR	
20	Flex. Disk Memory	HP; 9895A	G-133309		NCR	
21	Signal Generator		———			NOT USED
22	Oscilloscope	Tektronix; 2465	———			NOT USED
23	Digital Multimeter		———			NOT USED
24	Digital Multimeter		———			NOT USED
25	Digital Multimeter		———			NOT USED
26	Thermal Chamber	Thermotron; S-4 w/Cntl	H-B07567	09/18/91	09/02/92	UNCERTAINTY ±5°C
27	Data Acqtn Cntl Unit	HP; 3497A	H-428499	11/14/91	07/29/93	
28	Computer	HP; Model 85	H-428110		NCR	
29	Power Supply, AUX.	HP; 6299A	H-357054		NCR	
30	Plotter	HP; 7470A	H-512478		NCR	
31	Printer	HP; Thinkjet	H-A51399		NCR	
32	Atten; 1dB	Midwest Microwave; 238	NONE		NCR	?
33	Atten; 1dB	Midwest Microwave; 294	NONE		NCR	S P/o 20dB PAD
34	Thermocouple WIRE	COPPER/CONSTANTAN; TYPE T	NONE		BY TEST	AS REQUIRED
35						
36						
37						
38						
39						
40						
41						
42						

*NCR = No Calibration Required

A.D. Muller

STEP-STRESS TEST (abridged) DATA SHEET

Sheet 1 of 2

UUT Serial Number (enter MSN): -100/349 Test Date: 12-17-91

Tester: (Name & stamp below)

STEP-STRESS Level (enter 0 - 10): 4/0

BEGIN DAY #4

STEP-STRESS LEVEL DATA

TEMPERATURE STEP-STRESS: Ramp Chamber Temperature to STEP-STRESS Level; Stabilize, and Start Dwell at STEP-STRESS Level.

Begin RAMP: 12:00 (TIME HR:MIN) AT TEMP CHAMBER SET TO TEMP AT 1015 UUT PWR TURNED ON. REVERIFY DAY 3 DATA. Start DWELL: 13:34 (TIME HR:MIN) STRAT PLOT

LEVEL 4

STEP-STRESS Level Chamber Air Temperature: +91.2 (°C) (Chamber thermocouple reading) +93°C TSET

Flange Temperature: +96.1 (°C) (Thermocouple reading) (May be 1 of 6 channels)

STEP-STRESS Level Component Temperature: +101.0 (°C) (refer to Appendix D Table) +0.9/-1.8 °C

VOLTAGE STEP-STRESS: During Temperature Ramp; Increment Voltage to STEP-STRESS Level. (Record settings below)

LEVEL 0

Supply Voltages: +5 Volts dc: +5.00 (Vdc) -5 Volts dc: -5.00 (Vdc)

+15 Volts dc: +16.00 (Vdc) -15 Volts dc: -15.00 (Vdc)

Asm. Constant - 5 Volts dc Setting: -5.098 (Vdc) AVR #9 VR1 Removed

UUT PERFORMANCE TEST DATA

PERFORMANCE MONITORING ONLY (DURING TEST)

MONITORING NOTES & OBSERVATIONS ARE AS FOLLOWS: NO STATION CALIBRATION PERFORMED. STATION LACKING SIGNAL GENERATOR.

14:03 Synthesizers:

J12 has good output power and is stable for CH 50 and 45. (Using Software Test# 2 Frequency Sweep). Unlocked at CH's 18, 14, 04 and 00. J5 output stable all CH's, but is still 15dB low in power from previous STEP-STRESS TRIAL DAYs.

Detectors:

Setup is monitoring CH 50 only. Out continuously. Used signal generator

NOTES continued next page

STEP-STRESS TEST (abridged) DATA SHEET (CONTINUED)

Sheet 2 of 2

UUT Serial Number (enter MSN): -100/349 Test Date: 12-17-91

STEP-STRESS Level (enter 0 - 10): 4/0

UUT PERFORMANCE TEST DATA

MONITORING CONTINUED

MONITORING NOTES & OBSERVATIONS ARE AS FOLLOWS:

output from another LAB test station. (see equipment log) over 30ft of cable. At -75dBm all I & Q-bits are present and stable and roughly 50%. This applies to both Detectors. Signal generator set to 370.35 MHz.

STEP-STRESS LEVEL DATA

CONTINUED

TEMPERATURE STEP-STRESS: The Dwell will have a duration of 1-hour at this STEP-STRESS Level.

End DWELL: 14:34 (TIME HR:MIN)

STEP-STRESS LEVEL COMPLETE

STEP-STRESS TEST (abridged) DATA SHEET

Sheet 1 of 2

UUT Serial Number (enter MSN): -100/349 Test Date: 12-17-91

Tester: (Name & stamp below)

STEP-STRESS Level (enter 0 - 10): 5/0

DAY #4

STEP-STRESS LEVEL DATA

TEMPERATURE STEP-STRESS: Ramp Chamber Temperature to STEP-STRESS Level; Stabilize, and Start Dwell at STEP-STRESS Level.

Begin RAMP: 14:34 (TIME HR:MIN) Start DWELL: 15:04 (TIME HR:MIN)

LEVEL 5

STEP-STRESS Level Chamber Air Temperature: +98.6 (°C) (Chamber thermocouple reading) TSET = +101 °C

Flange Temperature: +103.0 (°C) (Thermocouple reading) (May be inaccurate)

STEP-STRESS Level Component Temperature: +100.6 (°C) (refer to Appendix D Table) +0.9/-1.5 °C

VOLTAGE STEP-STRESS: During Temperature Ramp; Increment Voltage to STEP-STRESS Level. (Record settings below)

LEVEL 0

Supply Voltages: +5 Volts dc: +5.00 (Vdc) -5 Volts dc: -5.00 (Vdc)

+15 Volts dc: +15.00 (Vdc) -15 Volts dc: -15.00 (Vdc)

Aux. Constant - 5 Volts dc Setting: -5.098 (Vdc) AV.RV # VR1 Removed

UUT PERFORMANCE TEST DATA

PERFORMANCE MONITORING ONLY (IN LIEU OF TEST)

MONITORING NOTES & OBSERVATIONS ARE AS FOLLOWS:

15:40 Synthesizers: No noticable change from Level 4/0. Using Synth. Freq. Sweep Test #2

Detectors: CH. 50 @ -75 dBm. I & Q - bits still good, both Detectors.

NOTES continued next page

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STEP-STRESS TEST (abridged) DATA SHEET (CONTINUED)

Sheet 2 of 2

UUT Serial Number (enter MSN): -100/349 Test Date: 12-17-91

STEP-STRESS Level (enter 0 - 10): 5/0

UUT PERFORMANCE TEST DATA

MONITORING CONTINUED

MONITORING NOTES & OBSERVATIONS ARE AS FOLLOWS:

None this sheet.

STEP-STRESS LEVEL DATA

CONTINUED

TEMPERATURE STEP-STRESS: The Dwell will have a duration of 1-hour at this STEP-STRESS Level.

(dwell elapsed 70 minutes) End DWELL: 16:14 (TIME HR:MIN)

STEP-STRESS LEVEL COMPLETE

TRIAL TEST RUN

STEP-STRESS TEST (abridged) DATA SHEET

Sheet 1 of 2

UUT Serial Number (enter MSN): -100/349 Test Date: 12-17-91

Tester: (Name & stamp below)

STEP-STRESS Level (enter 0 - 10): 6/0

DAY #4

STEP-STRESS LEVEL DATA

TEMPERATURE STEP-STRESS: Ramp Chamber Temperature to STEP-STRESS Level; Stabilize, and Start Dwell at STEP-STRESS Level.

Begin RAMP: 16:14 (TIME HR:MIN) Start DWELL: 16:44 (TIME HR:MIN)

LEVEL 6

STEP-STRESS Level Chamber Air Temperature: +106.1 (°C) (Chamber thermocouple reading) TSET = +109°C

Flange Temperature: +108.8 (°C) (Thermocouple reading) Frequently drops to this value in TC1

STEP-STRESS Level Component Temperature: +116.8 (°C) (refer to Appendix B Table) +0.9/-1.5 °C

VOLTAGE STEP-STRESS: During Temperature Ramp; Increment Voltage to STEP-STRESS Level. (Record settings below)

LEVEL 0

Supply Voltages: +5 Volts dc: +5.00 (Vdc) -5 Volts dc: -5.00 (Vdc)

+15 Volts dc: +15.00 (Vdc) -15 Volts dc: -15.00 (Vdc)

Aux. Constant - 5 Volts dc Setting: -5.098 (Vdc) AVRV # VR1 Removed from CKT

UUT PERFORMANCE TEST DATA

PERFORMANCE MONITORING ONLY (IN LIEU OF TEST)

MONITORING NOTES & OBSERVATIONS ARE AS FOLLOWS:

17:04 Paused Synth Freq Sweep #2 TEST Program to observe effect upon thermocouple readings being plotted. Slight temperature decrease to TC1 = flange and TC10 = A806 observed while at fixed frequency operation of Synthesizers. Fixed at CH 08.

17:14 Continued hopping Synthesizers through CH's 50, 45, 18, 14, 04 & 00. Temp of TC1 & TC10 increase on plot. TC10 lags TC1.

NOTES continued next page

TRIAL TEST RUN

STEP-STRESS TEST (abridged) DATA SHEET (CONTINUED)

Sheet 2 of 2

UUT Serial Number (enter MSN): -100/349 Test Date: 12-17-91

STEP-STRESS Level (enter 0 - 10): 6/0

UUT PERFORMANCE TEST DATA

MONITORING CONTINUED

MONITORING NOTES & OBSERVATIONS ARE AS FOLLOWS:

17:30 Observed Synthesizer J5 & J12 Freq Sweep. Little change from prior Level 6/0 Detector 1 & 2 I & Q-bits are good.

17:45 Synthesizer J5 @ CH 00 is down in Power by > 40dB from spec now.

17:46; 17:50; 17:54 thermocouple data eaten by printer. Next printout is 17:58.

STEP-STRESS LEVEL DATA

CONTINUED

TEMPERATURE STEP-STRESS: The Dwell will have a duration of 1-hour at this STEP-STRESS Level.

End DWELL: 18:02 (TIME HR:MIN)

STEP-STRESS LEVEL COMPLETE

STEP-STRESS TEST (abridged) DATA SHEET

Sheet 1 of 2

UUT Serial Number (enter MSN): -100/349 Test Date: 12-17-91

Tester: (Name & stamp below)

STEP-STRESS Level (enter 0 - 10): 7/0

DAY # 4

STEP-STRESS LEVEL DATA

TEMPERATURE STEP-STRESS: Ramp Chamber Temperature to STEP-STRESS Level; Stabilize, and Start Dwell at STEP-STRESS Level.

Begin RAMP: 18:02 (HR:MIN) Start DWELL: 18:32 (HR:MIN)

LEVEL 7

STEP-STRESS Level Chamber Air Temperature: +113.8 (°C) (Chamber thermocouple reading) Flange Temperature: +115.0 (°C) (Thermocouple reading)

STEP-STRESS Level Component Temperature: +123.8 (°C) (refer to Appendix D Table)

TEST = +117°C

TC1 dropping off & fluctuating. IS inoperable

VOLTAGE STEP-STRESS: During Temperature Ramp; Increment Voltage to STEP-STRESS Level. (Record settings below)

LEVEL 0

Supply Voltages: +5 Volts dc: +5.00 (Vdc) -5 Volts dc: -5.00 (Vdc)

+15 Volts dc: +15.00 (Vdc) -15 Volts dc: -15.00 (Vdc)

Aux. Constant -5 Volts dc Setting: -5.098 (Vdc) A4 A4 & A6J CKT removed

UUT PERFORMANCE TEST DATA

PERFORMANCE MONITORING ONLY (IN LIEU OF TEST)

MONITORING NOTES & OBSERVATIONS ARE AS FOLLOWS:

18:43 Synth J12 lower output power CH 50 & 45 and only slight spread on some. CHs 18, 14, 04, & 00 now lost locked though freq. sweep, although ff frequency. Detector still okay monitoring CH. 50. Synth J5 still same degraded state.

19:28 Note that TC1 = flange plot is getting closer to UUT TC2 = air temp. Semi-rigid cable to exterior of chamber are warm to touch and may be sinking heat to room, away from UUT. Need to monitor.

NOTES continued next page

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STEP-STRESS TEST (abridged) DATA SHEET (CONTINUED)

Sheet 2 of 2

UUT Serial Number (enter MSN): -100/349 Test Date: 12-17-91

STEP-STRESS Level (enter 0 - 10): 7/0

UUT PERFORMANCE TEST DATA MONITORING CONTINUED

MONITORING NOTES & OBSERVATIONS ARE AS FOLLOWS:

No observations this SHEET 2.

STEP-STRESS LEVEL DATA CONTINUED

TEMPERATURE STEP-STRESS: The Dwell will have a duration of 1-hour at this STEP-STRESS Level.

End DWELL: 19:34 (HR:MIN)

STEP-STRESS LEVEL COMPLETE

TRIAL TEST RUN

STEP-STRESS TEST (abridged) DATA SHEET

Sheet 1 of 2

UUT Serial Number (enter MSN): -100/349 Test Date: 12-17-91

Tester: (Name & stamp below) A.D. Mueller (stamp: 02468 TEST)

STEP-STRESS Level (enter 0-10): 8/0

DAY #4

STEP-STRESS LEVEL DATA

TEMPERATURE STEP-STRESS: Ramp Chamber Temperature to STEP-STRESS Level; Stabilize, and Start Dwell at STEP-STRESS Level.

Begin RAMP: 19:34 (TIME HR:MIN) Start DWELL: 20:04 (TIME HR:MIN)

LEVEL 8

STEP-STRESS Level Chamber Air Temperature: +181.7 (°C) (Chamber thermocouple reading) Tset @ +125°C

Flange Temperature: +128.6 (°C) (Thermocouple reading) From 20:34 - 21:30 only due to bad TC1 of prev points

STEP-STRESS Level Component Temperature: +131.7 (°C) (refer to Appendix D Table) +1.0/-1.2 °C

VOLTAGE STEP-STRESS: During Temperature Ramp; Increment Voltage to STEP-STRESS Level. (Record settings below)

LEVEL 0

Supply Voltages: +5 Volts dc: +5.00 (Vdc) -5 Volts dc: -5.00 (Vdc)

+15 Volts dc: +15.00 (Vdc) -15 Volts dc: -15.00 (Vdc)

Aux. Constant -5 Volts dc Setting: -5.098 (Vdc) A4 R4 & U6 Removed

UUT PERFORMANCE TEST DATA

PERFORMANCE MONITORING ONLY (IN LIEU OF TEST)

MONITORING NOTES & OBSERVATIONS ARE AS FOLLOWS:

19:56 (22 minutes into Ramp) Synth J12 unlocking now at CH 00. Output power still good. J5 Synth still >15 dB low in power except at CH 00 where it is >40 dB.

20:06 TC1 = flange thermocouple dropped off on plot. Thermocouple is bad

20:26 Wiggled semi-rigid coaxes & TC1 came back.

NOTES continued next page

TRIAL TEST RUN

STEP-STRESS TEST (abridged) DATA SHEET (CONTINUED)

Sheet 2 of 2

UUT Serial Number (enter MSN): -100/349 Test Date: 12-17-91

STEP-STRESS Level (enter 0-10): 8/0 (stamp: 02468 TEST)

UUT PERFORMANCE TEST DATA

MONITORING CONTINUED

MONITORING NOTES & OBSERVATIONS ARE AS FOLLOWS:

20:27 Synth J12 now losing lock @ CH 00, 04, 14. Detectors are okay. Lost thermocouple data for 20:26 due to paper jam (TC1 - TC4 only recorded).

20:34 TC1 = flange has come back fully and is greater than before. Question previous data for TC1 DAY #4. Value now is compatible to DAY #1 - DAY #3 readings. Need to analyze.

21:09 Synth J12 unlocks at 00, 04, 14 & 45. CH. 18 & 50 okay, but off frequency. J5 Synth still the same.

21:12 Synth J12 unlocking @ CH 18. CH 50 only one locked. TC10 = A3Q6 increase on plot

STEP-STRESS LEVEL DATA

CONTINUED

TEMPERATURE STEP-STRESS: The Dwell will have a duration of 1-hour at this STEP-STRESS Level.

End DWELL: 21:30 (TIME HR:MIN)

END DAY #4 TESTS.

STEP-STRESS LEVEL COMPLETE

SECTION 5

Data Reduction Tables and Plots

prepared by S. D. Mueller
and B. J. Armstrong
and J. R. Switzer

TABLE D-2: TEMPERATURE STRESS LEVEL DATA WITHOUT VOLTAGE STRESS (n / 0)

Step-Stress Level Temp/Volt	Date (Day) Time (Minutes)	Data Set No.	Trial Chamber Setting T_{set}	UUT Ambient Air T_{amb} = TC2	Flange Chassis T_{flg} = TC1	Component's Compartment Air A3 TC3	A4 TC4	A2 TC5	Average $\bar{x}$ T_{cmp}	Component Stress Level T_{CSL}	7* Data Reduction ΔT_1 = cmp -amb	ΔT_2 = amb -set	ΔT_3 = CSL -cmp	ΔT_4 = flg -amb	Calibrated Chamber Setting T_{SET}
na / 0	11/25/91 (Day 1) 23:49-00:24 (35)	8	40 1*	40.9 +0.6 -0.6	46.3 +0.6 -0.3	52.0 +0.2 -0.7	49.5 +0.4 -0.4	51.9 +0.4 -0.2	51.1 +1.1 -2.0	70	+10.2 1*	+0.9	+18.9	+5.4	59
0 / 0	11/26/91 (Day 1) 01:04-01:34 (30)	7	60 2*	59.3 +0.1 -0.1	64.5 +0.1 -0.2	71.4 +0.2 -0.3	67.9 +0.4 -0.9	69.8 +0.1 -0.3	69.7 +1.9 -2.7	70	+10.4	- 0.7	+0.3	+5.2	60 2*
0 / 0	11/26/91 (Day 2) 20:42-22:14 (92)	24	61	60.3 +0.2 -0.1	65.6 +0.2 -0.2	71.4 +0.1 -0.3	68.8 +0.2 -0.3	71.0 +0.1 -0.3	70.4 +1.1 -1.9	70	+10.1	- 0.7	- 0.4	+5.3	61
0 / 0	11/27/91 (Day 3) 17:17-17:37 (20)	6	61	60.5 +0.1 -0.1	65.8 +0.1 -0.1	71.8 +0.1 -0.0	69.2 +0.1 -0.1	70.6 +0.1 -0.0	70.5 +1.4 -1.4	70	+10.0	- 0.5	- 0.5	+5.3	61
4 / 0	11/27/91 (Day 3) 14:09-14:17 (08)	3	93	91.3 +0.1 -0.1	97.0 +0.0 -0.0	102.7 +0.0 -0.0	100.2 +0.1 -0.0	101.7 +0.0 -0.0	101.5 +1.2 -1.3	102	+10.2	- 1.7	+0.5	+5.7	94
4 / 0	12/17/91 (Day 4) 13:38-14:34 (56)	15	93	91.2 +0.2 -0.5 3*	96.1 +0.2 -0.5	101.8 +0.1 -0.1	100.0 +0.1 -0.2	101.3 +0.1 -0.0	101.0 +0.9 -1.2	102	+ 9.8	- 1.8	+1.0	+4.9 3*	94
5 / 0	12/17/91 (Day 4) 15:06-16:14 (68)	18	101	98.6 +0.5 -0.5 3*	103.0 +0.2 -0.3	109.4 +0.1 -0.3	107.5 +0.1 -0.4	108.8 +0.1 -0.3	108.6 +0.9 -1.5	110	+10.0	- 2.4	+1.4	+4.4 3*	102
6 / 0	12/17/91 (Day 4) 16:46-16:02 (76)	4* 17	109	106.1 +1.1 -0.7 3*	108.8 +0.4 -0.9	117.1 +0.0 -0.3	115.2 +0.1 -0.3	116.4 +0.1 -0.3	116.2 +0.9 -1.3	118	+10.1	- 2.9	+1.8	+2.7 3*	111
7 / 0	12/17/91 (Day 4) 18:34-19:34 (60)	16	117	113.8 +1.1 -0.8 3*	115.0 +1.1 -2.7	124.9 +0.0 -0.2	122.9 +0.2 -0.2	123.8 +0.8 -0.8	123.8 +1.1 -1.1	126	+10.0	- 3.2	+2.2	+2.0 3*	119
8 / 0	12/17/91 (Day 4) 20:06-21:33 (84)	5* 22	125	121.7 +1.1 -1.0 6*	128.6 +0.1 -0.0	132.6 +0.1 -0.3	130.8 +0.1 -0.3	5* 131.7 +0.7 -0.8	131.7 +1.0 -1.2	134	+10.0	- 3.3	+2.3	+6.9 3*	127

NOTES:
1* Point of trial test origination to determine ΔT_1.
2* First trial test setting to locate T_{CSL} and T_{SET}.
3* TC1 data Day 4 is unreliable; Bad TC1 contact with UUT.
4* No data printout 17:46-17:54 for TC1-TC5; Paper jam.
5* No data printout 20:26 for TC5 (21 pts); Paper jam.
6* Only data printout 20:34-21:30 used for TC1 (15 pts); Bad TC1.
7* ΔT_1 is a constant were no voltage stress is applied..

$$T_{CSL} - (T_{cmp} - T_{amb}) - (T_{amb} - T_{set}) = T_{SET}$$
$$T_{CSL} - \Delta T_1 - \Delta T_2 = T_{SET}$$
OR
$$T_{CSL} - (T_{cmp} - T_{amb}) - (T_{amb} - T_{set}) = T_{SET}$$
$$(T_{CSL} - T_{cmp}) + T_{set} = T_{SET}$$
$$\Delta T_3 + T_{set} = T_{SET}$$

TABLE D-3: TEMPERATURE STRESS LEVEL DATA INCLUDING VOLTAGE STRESS (n / n)

Step-Stress Level(n) Temp/Volt	Date (Day) Time (Minutes)	Cycle Day	Trial Chamber Setting T_{set}	UUT Ambient Air T_{amb_n}=TC2	Flange Chassis T_{flg_n}=TC1	Component's Compartment Air A3 TC3	A4 TC4	A2 TC5	Average $\bar{x}$ T_{cmp_n}	Component Stress Level 10* T_{CSL}	Data Reduction 7* $\Delta T_{1\bar{r}}$ $_{cmp_n-amb_n}$	8* $\Delta T_{2\bar{r}}$ $_{amb_n-set}$	9* $\Delta T_{3\bar{r}}$ $_{CSL-cmp_n}$	$\Delta T_{4\bar{r}}$ $_{flg_n-amb_n}$	Calibrated Chamber Setting 10* T_{SET}
1 / 1	11/26/91 (Day 1) 02:19-02:39 (20)	5	68	$67.1^{+0.0}_{-0.0}$	$72.5^{+0.1}_{-0.0}$	$79.5^{+0.0}_{-0.1}$	$76.1^{+0.1}_{-0.3}$	$77.8^{+0.0}_{-0.1}$	$77.8^{+1.7}_{-1.8}$	78	+10.7 -0.6(1)	- 0.9	+0.2	+5.4	69
1 / 1	11/26/91 (Day 2) 22:46-23:44 (58)	16	69	$68.1^{+0.2}_{-0.1}$	$73.8^{+0.2}_{-0.3}$	$79.9^{+0.2}_{-0.2}$	$77.1^{+0.2}_{-0.3}$	$79.5^{+0.1}_{-0.3}$	$78.8^{+1.3}_{-2.0}$	78	+10.7 -0.6(1)	- 0.9	- 0.8	+5.7	69
2 / 2	11/27/91 (Day 2) 00:16-00:28 (12)	4	77	$75.8^{+0.0}_{-0.0}$	$81.8^{+0.1}_{-0.1}$	$88.3^{+0.1}_{-0.1}$	$85.2^{+0.1}_{-0.0}$	$87.7^{+0.1}_{-0.1}$	$87.1^{+1.3}_{-2.0}$	86	+11.3 -0.6(2)	- 1.2	- 1.1	+6.0	77
3 / 3	11/27/91 (Day 2) 01:00-01:28 (28)	8	85	$83.5^{+0.3}_{-0.1}$	$89.8^{+0.1}_{-0.2}$	$96.8^{+0.2}_{-0.2}$	$93.5^{+0.1}_{-0.2}$	$96.1^{+0.1}_{-0.3}$	$95.5^{+1.5}_{-2.2}$	94	+12.0 -0.6(3)	- 1.5	- 1.5	+6.3	85
4 / 4	11/27/91 (Day 2) 02:00-02:56 (56)	15	93	$91.3^{+0.2}_{-0.1}$	$98.0^{+0.1}_{-0.2}$	$105.6^{+0.2}_{-0.4}$	$101.8^{+0.2}_{-0.2}$	$104.5^{+0.2}_{-0.3}$	$104.0^{+1.8}_{-2.4}$	102	+12.7 -0.6(4)	- 1.7	- 2.0	+6.7	93
4 / 4	11/27/91 (Day 3) 13:13-13:41 (28)	8	93	$91.3^{+0.2}_{-0.1}$	$98.1^{+0.0}_{-0.2}$	$105.7^{+0.1}_{-0.3}$	$101.8^{+0.2}_{-0.2}$	$104.2^{+0.1}_{-0.2}$	$103.9^{+1.9}_{-2.3}$	102	+12.6 -0.6(4)	- 1.7	- 1.9	+6.8	94
5 / 5	11/27/91 (Day 3) 15:05-15:37 (32)	9	101	$98.9^{+0.1}_{-0.1}$	$106.0^{+0.0}_{-0.2}$	$114.2^{+0.1}_{-0.2}$	$110.0^{+0.2}_{-0.2}$	$112.4^{+0.1}_{-0.1}$	$112.2^{+2.1}_{-2.4}$	110	+13.3 -0.6(5)	- 2.1	- 2.2	+7.1	102
0 / 5	11/27/91 (Day 3) 16:21-16:45 (24)	7	61	$60.8^{+0.2}_{-0.1}$	$67.7^{+0.3}_{-0.2}$	$76.2^{+0.4}_{-0.3}$	$71.8^{+0.5}_{-0.3}$	$74.4^{+0.6}_{-0.1}$	$74.1^{+2.5}_{-2.6}$	70	+13.3 -0.6(5)	- 0.2	- 4.1	+6.9	60

7* We find that without Voltage stress applied to the UUT, that $\Delta T_{1_0} = T_{cmp_0} - T_{amb_0}$ is a constant equal to 10.1.

8* Evaluating the effects Voltage stress has upon the thermal rise within the UUT, we find by comparing like Temperature stress Levels n, that: $\Delta T_{1_n} - \Delta T_{1_0} = \Delta T_{1_n} - 10.1 = 0.6 \times n$.

9* We also find that the effects of Voltage stress upon the UUT Ambient Air is negligible compared to the accuracy of the Chamber setting. $\Delta T_{2_n} = \Delta T_{2_0}$.

10* Therefore, we define a Calibrated Chamber setting T_{SET} which directly relates to Component Stress Level T_{CSL} and cancels the effects of Voltage stress and Chamber inaccuracy.

To cancel contributions of Voltage stress to the thermal characteristics, we define: n = stress Level n with Voltage stress also applied.
0 = stress Level n without Voltage stress applied.

$$T_{CSL} - \{(T_{cmp_n} - (T_{cmp_n} - T_{cmp_0})) - (T_{amb_n} - (T_{amb_n} - T_{amb_0}))\} - \{((T_{amb_n} - (T_{amb_n} - T_{amb_0})) - T_{set}\} = T_{SET}$$

$$T_{CSL} - \{(\quad + T_{cmp_0}) - (\quad + T_{amb_0})\} - \{(\quad + T_{amb_0}) - T_{set}\} = T_{SET}$$

$$T_{CSL} - \Delta T_{1_0} - \Delta T_{2_0} = T_{SET}$$

OR

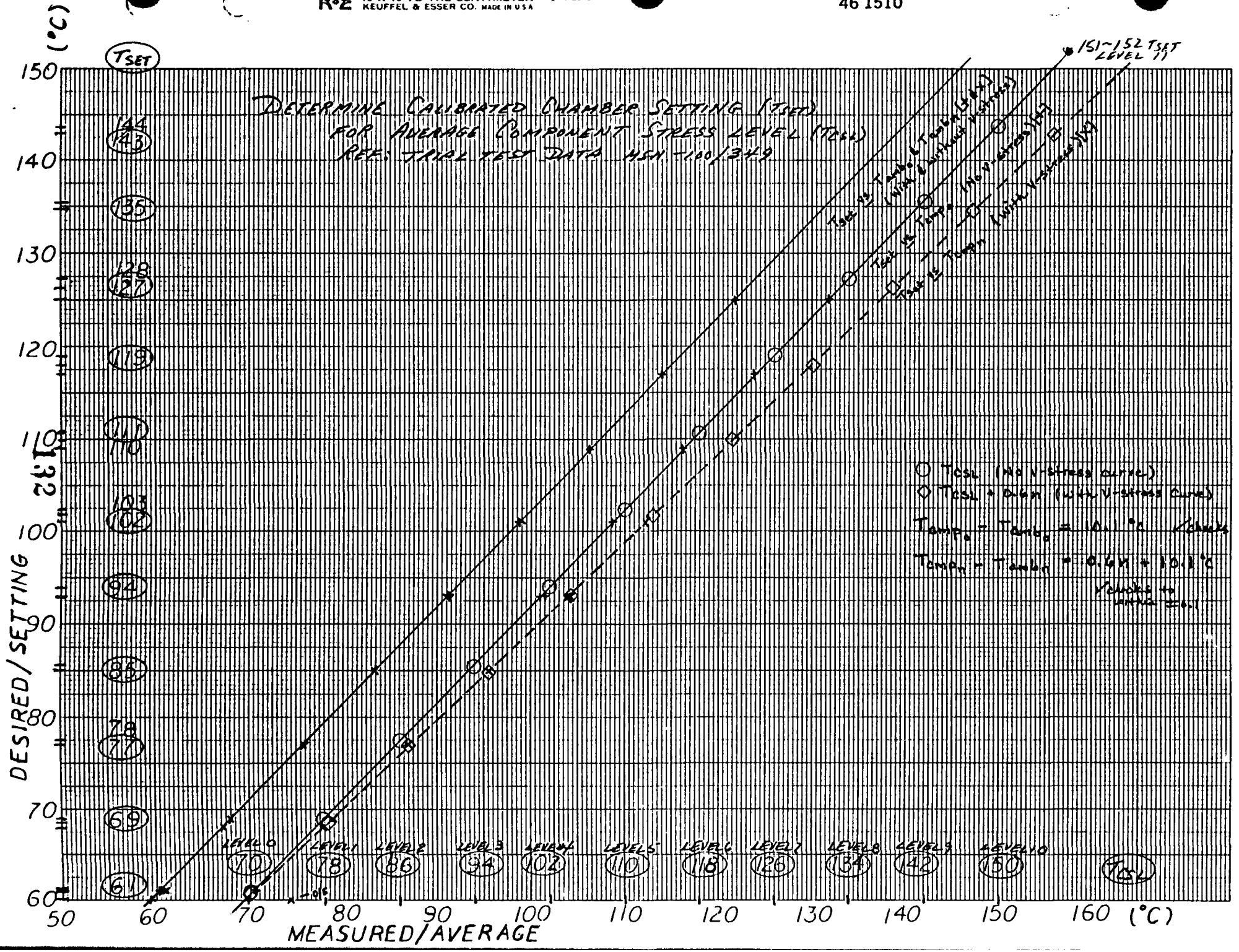
$$T_{CSL} - \{(T_{cmp_n} - (T_{cmp_n} - T_{cmp_0})) - (T_{amb_n} - (T_{amb_n} - T_{amb_0}))\} - \{((T_{amb_n} - (T_{amb_n} - T_{amb_0})) - T_{set}\} = T_{SET}$$

$$T_{CSL} - \{\quad + T_{cmp_0} \quad\} - \{\quad - T_{set}\} = T_{SET}$$

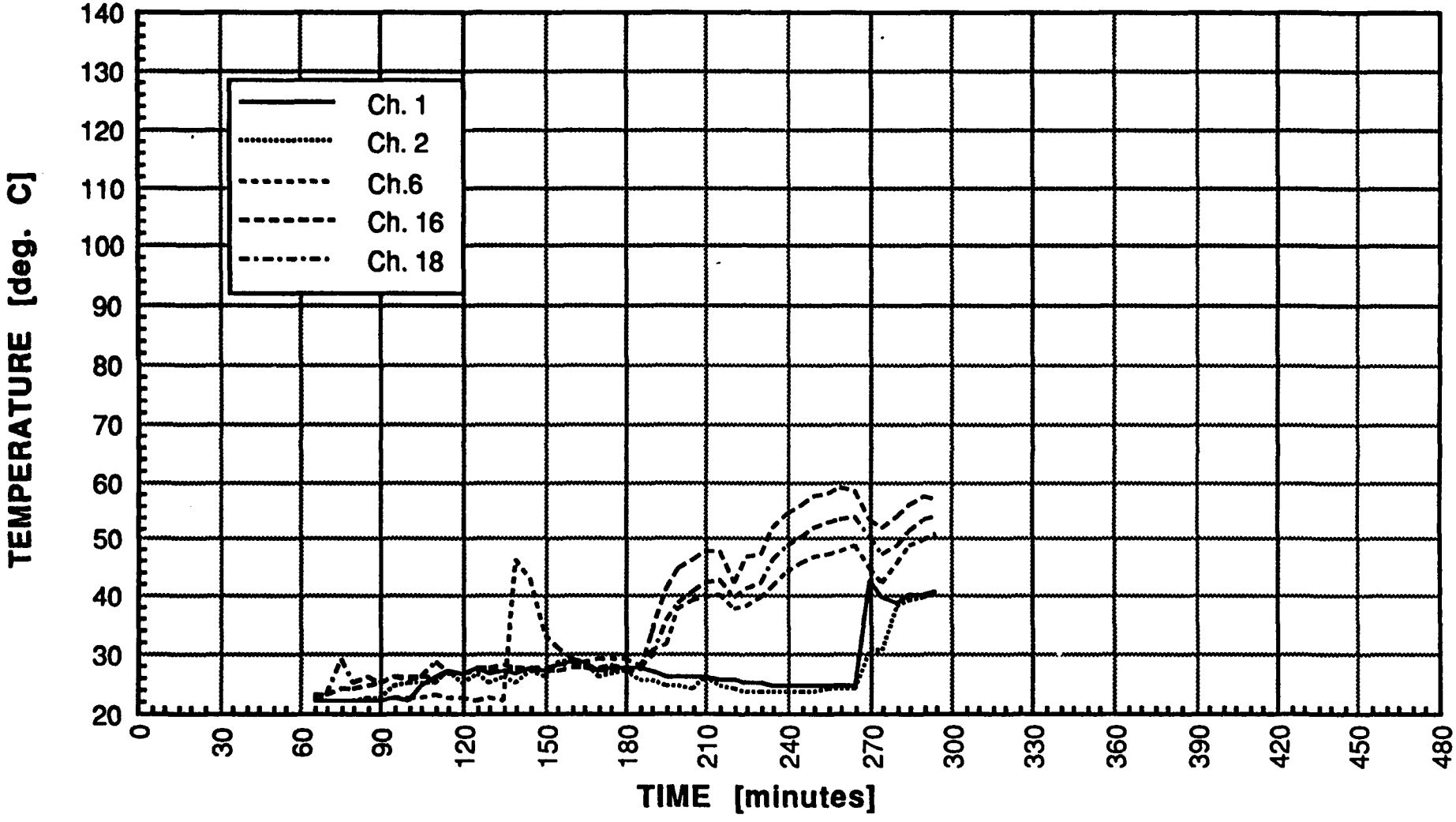
$$\Delta T_{3_0} + T_{set} = T_{SET}$$

DETERMINE CALIBRATED CHAMBER SETTING (TSET) FOR AVERAGE COMPONENT STRESS LEVEL (TCSL)

REF: TRIAL TEST DATA USN-100/3429

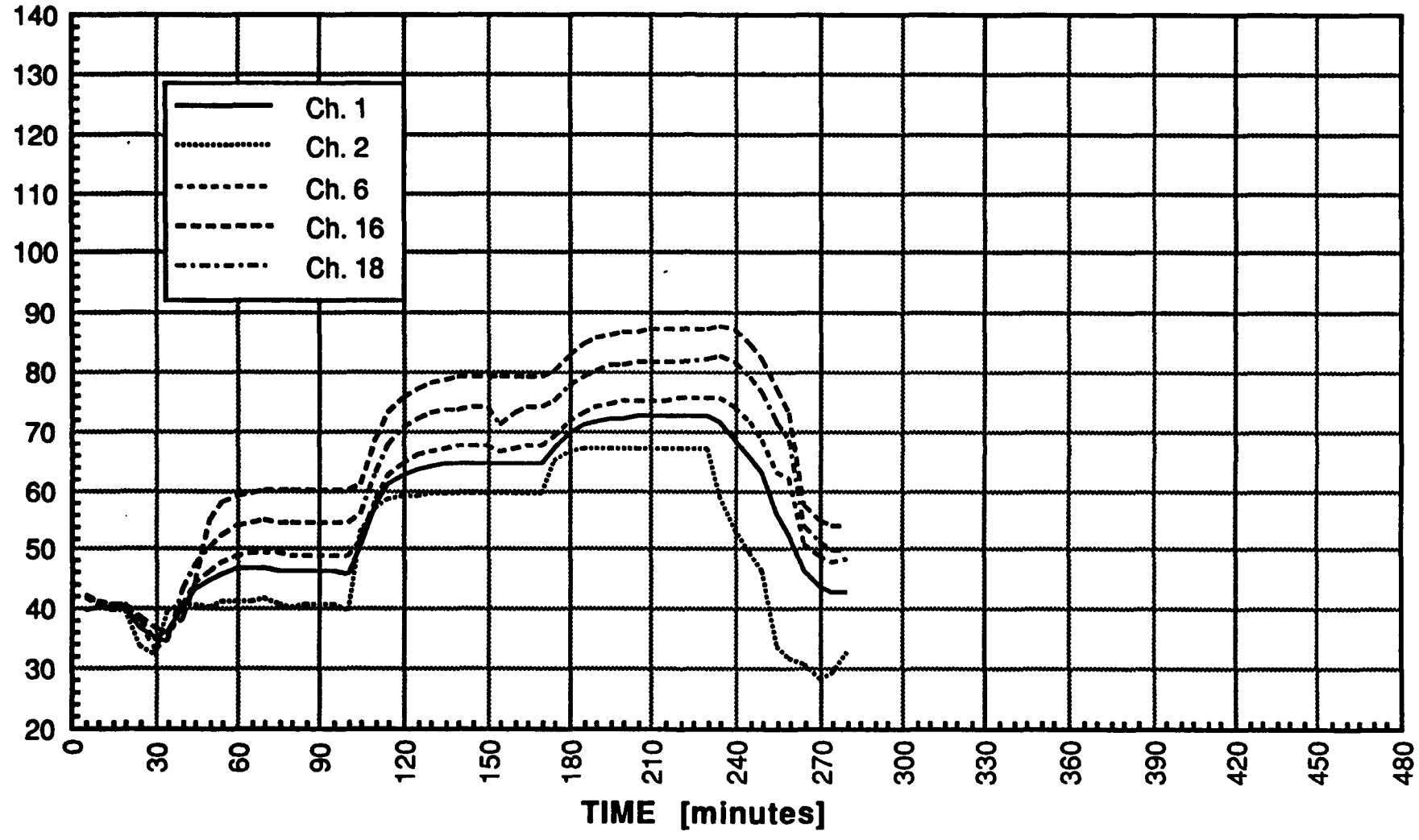


DAY 1 [redacted] TEMPERATURE TRANSITION SURVEY



TRIAL TEST RUN MSN -100/ 349

DAY 1 [redacted] TEMPERATURE TRANSITION SURVEY



TRIAL TEST RUN MSN -100/ 349

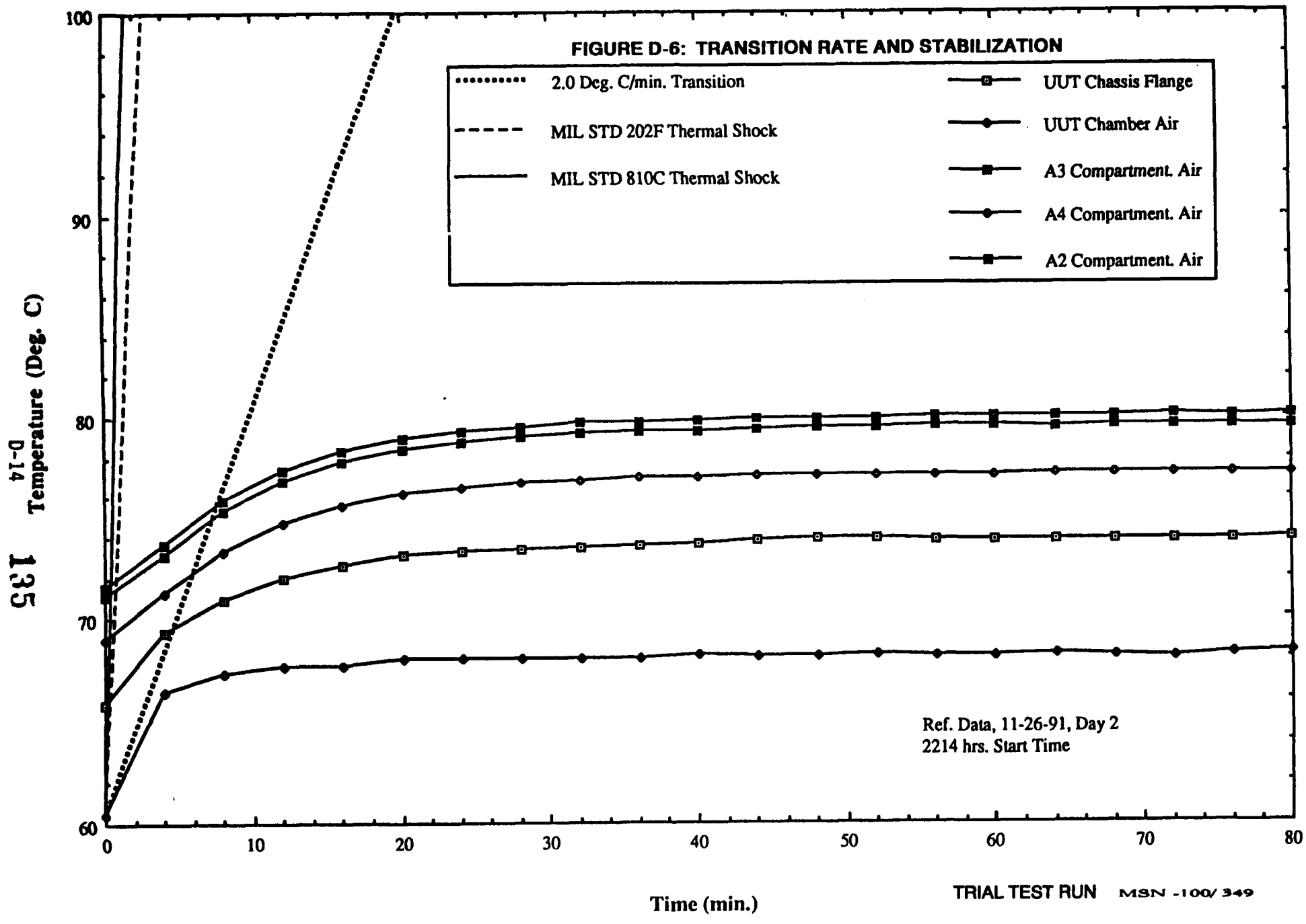
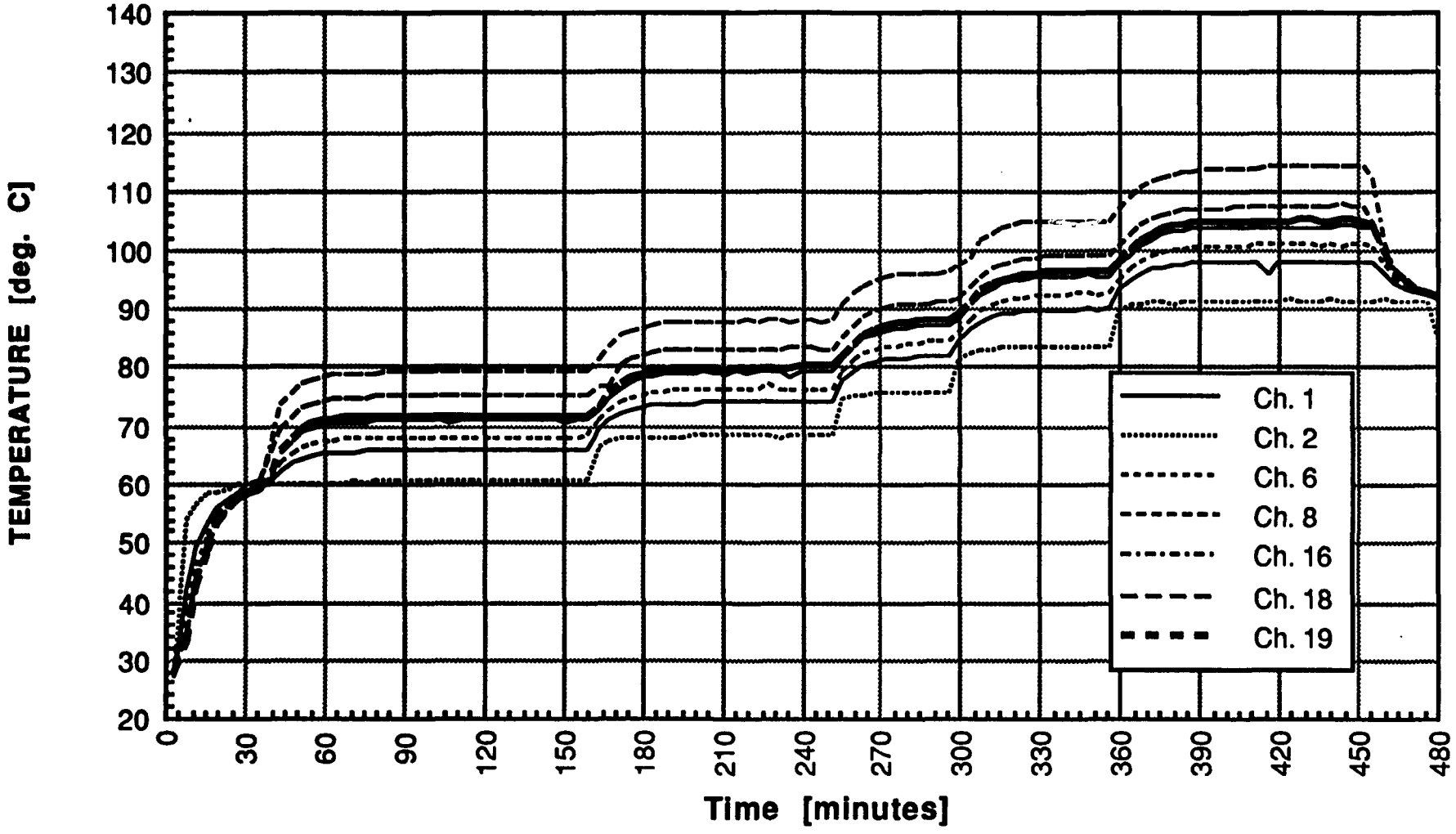
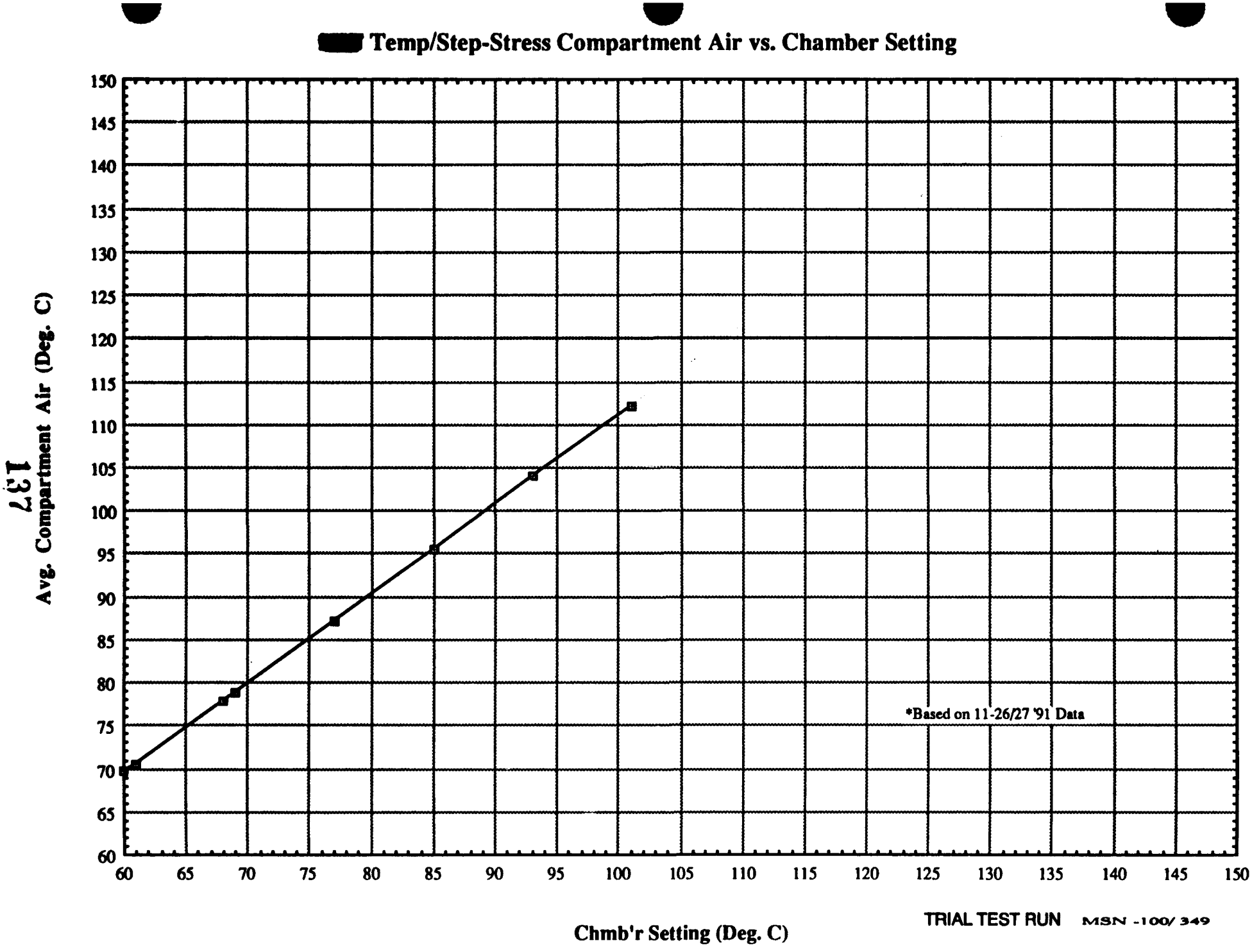


FIGURE D-6: TRANSITION RATE AND STABILIZATION
2.0 Deg. C/min. Transition
MIL STD 202F Thermal Shock
MIL STD 810C Thermal Shock
UUT Chassis Flange
UUT Chamber Air
A3 Compartment. Air
A4 Compartment. Air
A2 Compartment. Air
Temperature (Deg. C)
100
90
80
70
60
0
10
20
30
40
50
60
70
80
Time (min.)
Ref. Data, 11-26-91, Day 2
2214 hrs. Start Time
TRIAL TEST RUN MSN -100/ 349

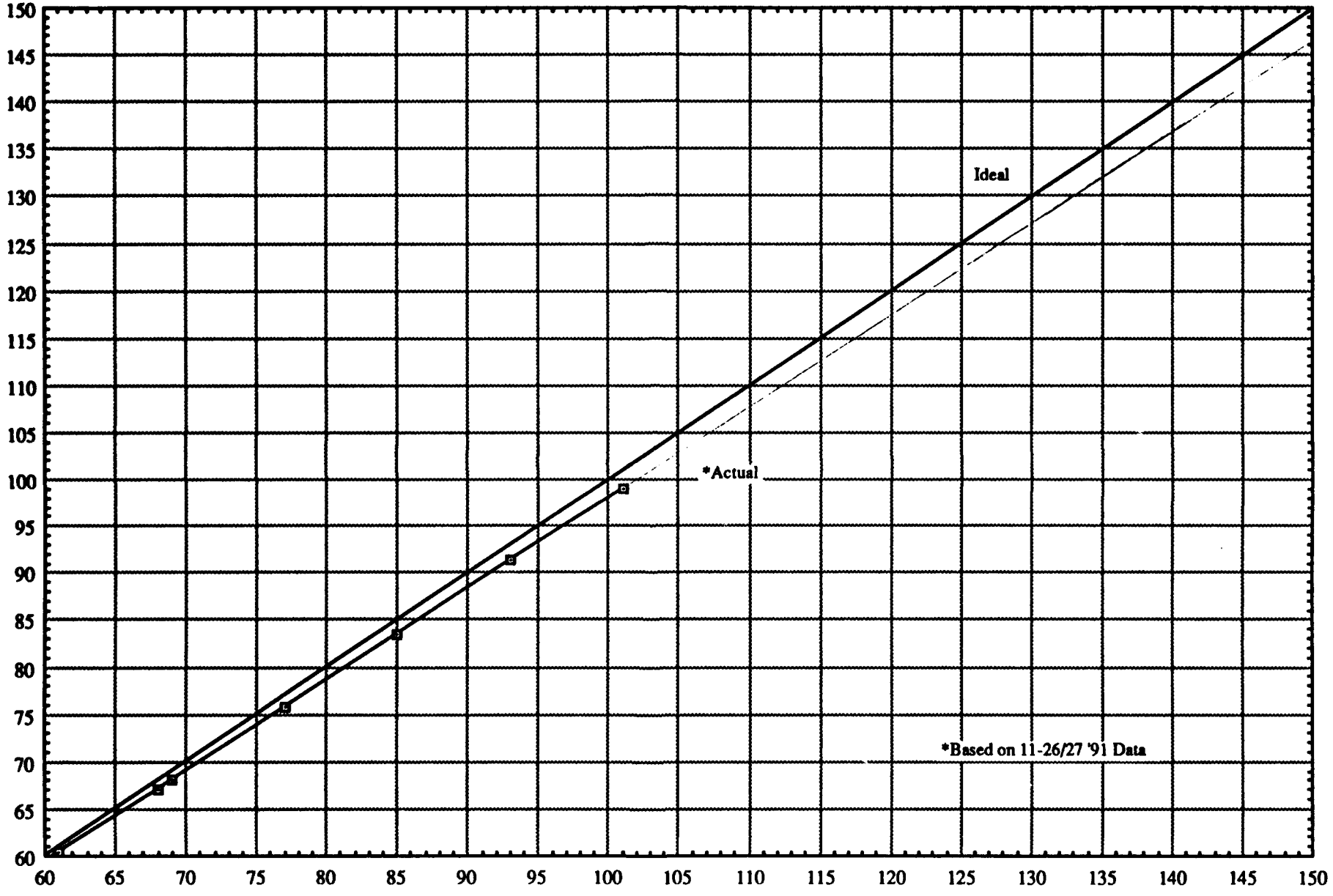
DAY 2 [redacted] TEMPERATURE TRANSITION SURVEY



TRIAL TEST RUN MSN -100/ 349

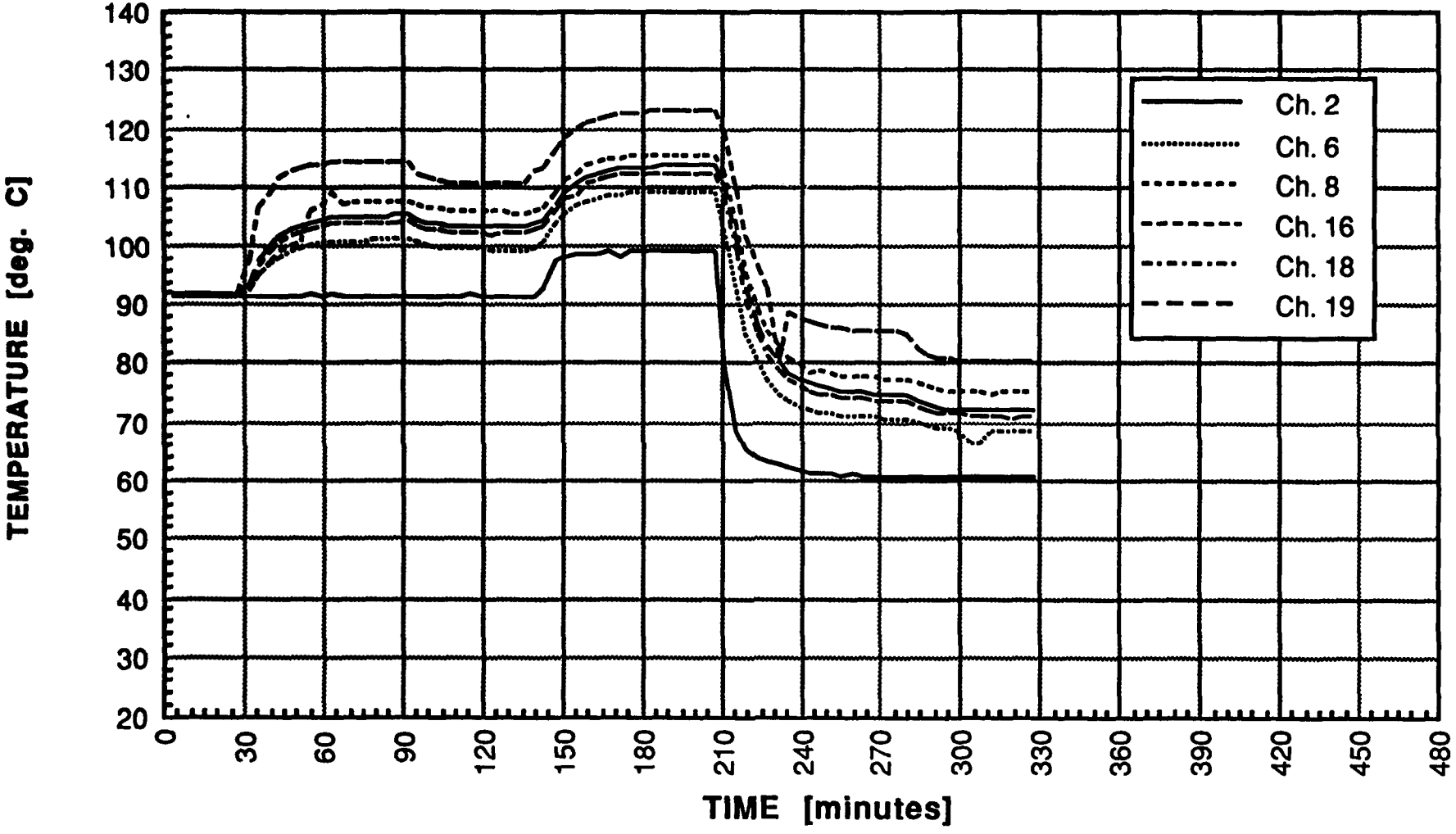

Temp/Step-Stress Compartment Air vs. Chamber Setting
Avg. Compartment Air (Deg. C)
150
145
140
135
130
125
120
115
110
105
100
95
90
85
80
75
70
65
60
60 65 70 75 80 85 90 95 100 105 110 115 120 125 130 135 140 145 150
Chmb'r Setting (Deg. C)
*Based on 11-26/27 '91 Data
TRIAL TEST RUN MSN -100/ 349

[redacted] Temp/Step-Stress Chamber Setting



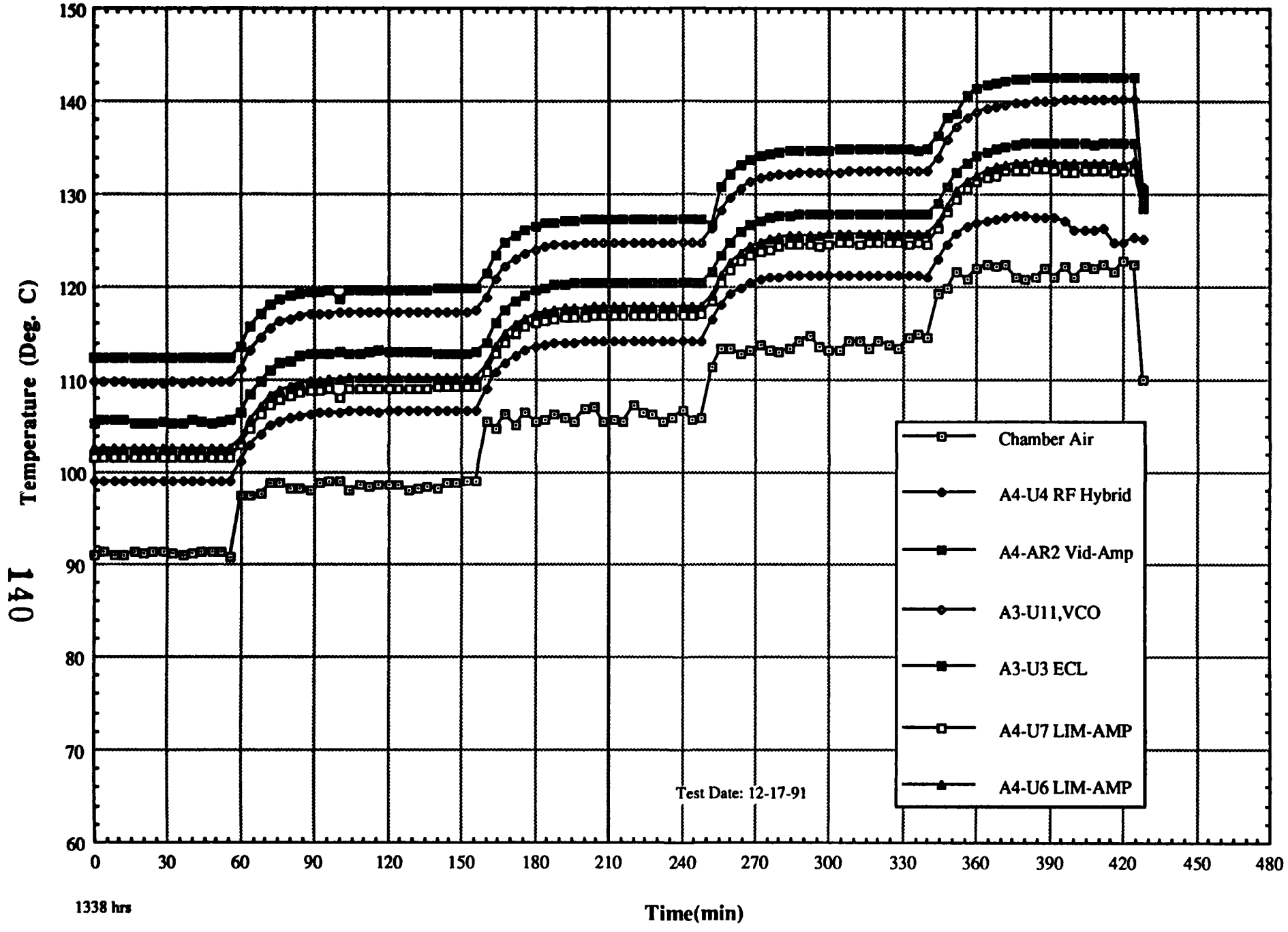
TRIAL TEST RUN MSN -100/ 349

DAY 3 [redacted] TEMPERATURE TRANSITION SURVEY



TRIAL TEST RUN MSN -100/ 349

TEMP. STRESS RESULTS, DAY 4



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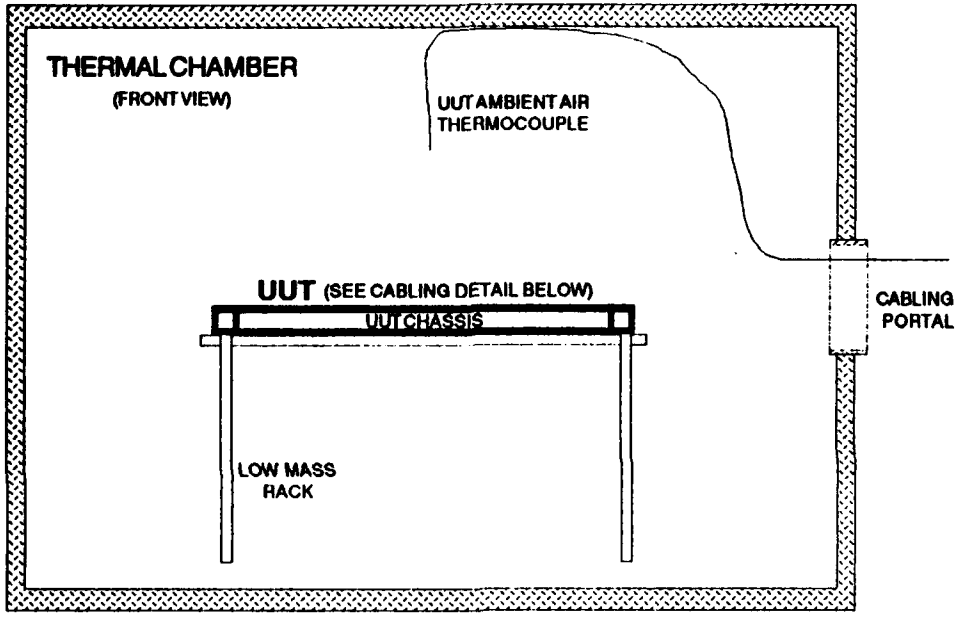
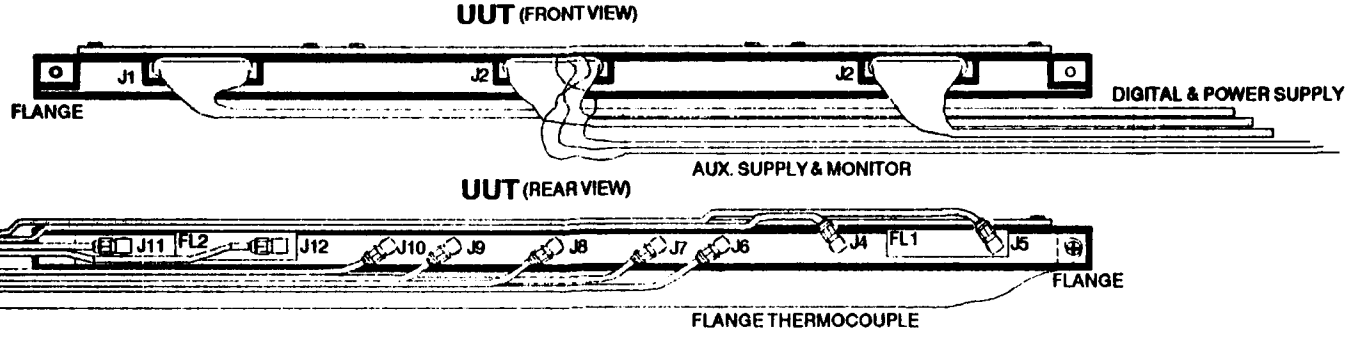
SECTION 6

Unit Modification & Equipment Setup

prepared by S. D. Mueller
and B. J. Armstrong
and W. T. Clark

CHAMBER SETUP

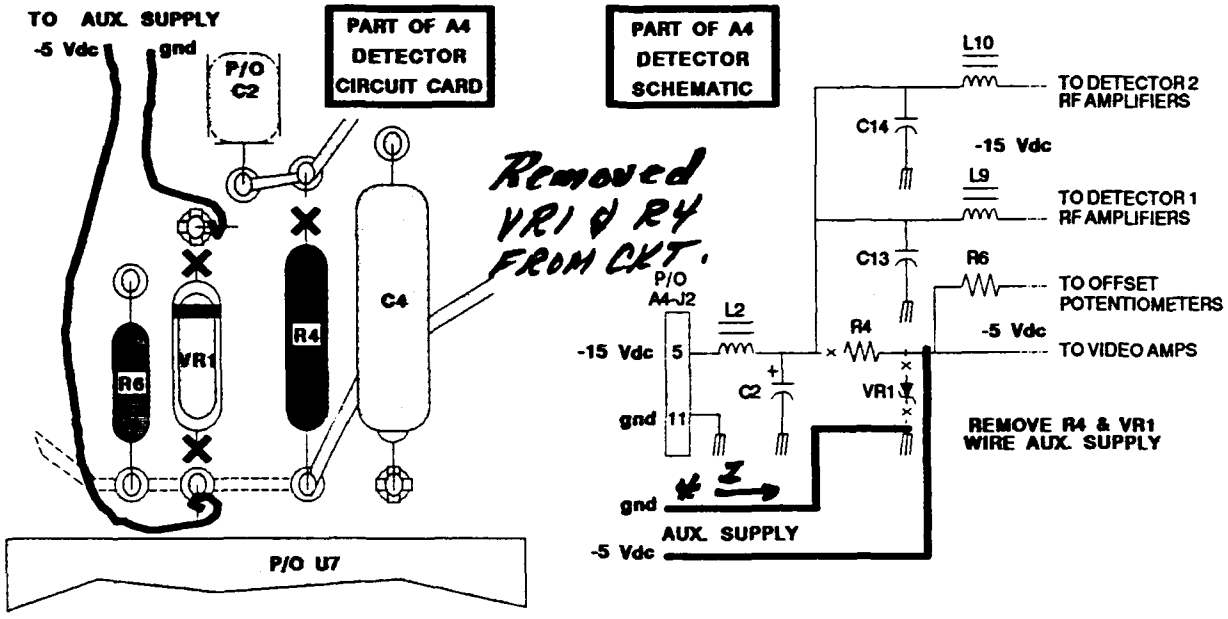




R4/VR1

— PROPOSED MOD — (11-26-91)

FIGURE D-2: A4 DETECTOR CIRCUIT CARD MODIFICATION FOR AUXILLIARY -5 Vdc CONSTANT SUPPLY



MOD. USED IN TRIAL TEST RUN MSN -100/349 (DAY 2, 3 & 4 TESTING)

SEE MOD. PLANNING FOR CIRCUIT REQUIREMENTS OF ACTUAL STEP-STRESS TEST (12-13-91)

* MEASURED SUPPLY CURRENT $I = 56$ mA w/ $V = -5.10$ Vdc. $\therefore R_{LOAD} = 91.07\ \Omega$

$P_{LOAD} = 0.28$ WATT

SELECT LOAD OF 91 Ω ±5%, 1/2 WATT

(01-17-92)

CAUTION!!
THIS ASSEMBLY IS STATIC SENSITIVE!! HANDLE PER MHI 8.53.19

REWORK/MODIFICATION PLANNING

PROJECT: [redacted]

HUGHES
GROUND SYSTEMS GROUP

SLR NO.	PLANNED BY S. D. MUELLER SDM DATE 12/13/91	QUALITY OPERATIONS	PART NO. [redacted]-103
IDR NO.	CHECKED BY [signature] DATE 12/16/91		NAME SYNTHESIZER/DETECTOR ASSY
HRT NO.	CHANGED BY DATE		LEVEL UNIT, SRU
DDT NO.	REASON FOR REVISION		
OTHER	N = MODIFY FOR STEP-STRESS TEST (A4 CCA R4 & VR1 MONITORING AND AUX. -5 V SUPPLY)		WORK ORDER NO.
MFG. SEQ. NO. FROM THRU			QTY. OF PARTS 1

OPER NO.	ORG. SOURCE	OPERATION DESCRIPTION
		CAUTION: THE FOLLOWING MOD WILL BE PERFORMED FROM THE COMPONENT SIDE OF THE A4 DETECTOR CCA P/N [redacted] WITHOUT REMOVING THE CCA FROM THE CHASSIS.
		NOTE: ALL WORK TO BE PERFORMED IN ACCORDANCE WITH WCM VOL II.
10	1A-K5-55	OBTAIN SYNTHESIZER/DETECTOR ASSEMBLY P/N [redacted]-103 AND ROUTE TO REWORK LINE.
20	1A-55-50	REMOVE ASSEMBLY COVER AND SAVE HARDWARE. READ CAUTION ABOVE.
30	1A-55-50	REMOVE CONFORMAL COAT FROM LEADS AND PADS OF A4-R4 (P/N RWR80S93R1FM) AND A4-VR1 (P/N JANTX1N751A-1).
40	1A-55-50	AT PAD OF VR1 (NEAR U7 HYBRID), CLIP VR1 LEAD LEAVING 1/10-INCH LEAD PROTRUSION FROM PAD.
50	1A-55-50	SOLDER 8-FT OF RED 22 GA WIRE (P/N ~~4297840-155,~~ OR EQUIV.) TO LEAD PROTRUDING FROM PAD LEFT FROM OPER. NO. 40 ABOVE.
60	1A-55-50	SOLDER 8-FT OF WHT ~~RED-GREEN~~ 22 GA WIRE (P/N ~~995442-925~~, OR EQUIV.) TO GROUNDED LEAD AT OPPOSITE END OF VR1.
70	1A-55-50	REMOVE SOLDER FROM FEEDTHROUGH HOLE OF PAD AROUND LEAD OF R4 (NEAR U7 HYBRID) AND PULL R4 LEAD AWAY FROM PAD.
80	1A-55-50	WRAP LEAD OF R4 AROUND REMAINING LEAD OF VR1. WRAP AND SOLDER 8-FT OF BLK ~~GREEN~~ 22 GA WIRE (P/N ~~4297840-209~~, OR EQUIV.) TO JOIN LEADS.
90	1A-55-50	ISOLATE LEADS OF OPER. NO. 80, ABOVE, FROM SHORTING TO PWB USING BONDING COMPOUND (P/N 760595, OR EQUIV). AIR CURE.
100	1A-55-50	ROUTE WIRES TO EXTERIOR OF CHASSIS, CENTERING OVER J2 CONNECTOR. USE ADDITIONAL SLEEVING OVER WIRES TO PROTECT FROM DAMAGE BETWEEN CHASSIS AND COVER.
110	1A-55-50	INSTALL COVER ON ASSEMBLY, OMITTING SCREWS ON EACH SIDE OF J2 CONNECTOR. TORQUE 8 IN-LB.

NOTE: DEPOT CHANGED COLORS DUE TO WIRE AVAIL. SDM

CAUTION!!
THIS ASSEMBLY IS STATIC SENSITIVE!! HANDLE PER MHI 8.53.19

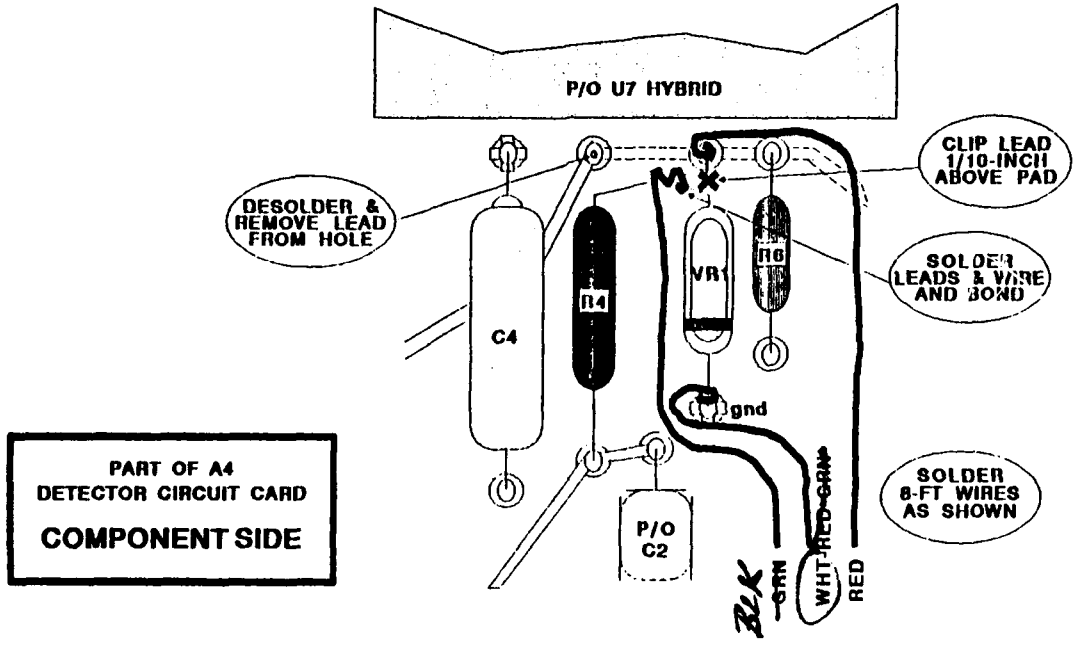
REWORK/MODIFICATION PLANNING

PROJECT: [redacted]

HUGHES
GROUND SYSTEMS GROUP

SLR NO.	PLANNED BY S. D. MUELLER SDM DATE 12/13/91	QUALITY OPERATIONS	PART NO. [redacted]-103
IDR NO.	CHECKED BY DATE		NAME SYNTHESIZER/DETECTOR ASSY
HRT NO.	CHANGED BY DATE		LEVEL UNIT, SRU
DDT NO.	REASON FOR REVISION		
OTHER	N = MODIFY FOR STEP-STRESS TEST (A4 CCA R4 & VR1 MONITORING AND AUX. -5 V SUPPLY)		WORK ORDER NO.
MFG. SEQ. NO. FROM THRU			QTY. OF PARTS 1

OPER NO.	ORG. SOURCE	OPERATION DESCRIPTION
		CAUTION: THE FOLLOWING MOD WILL BE PERFORMED FROM THE COMPONENT SIDE OF THE A4 DETECTOR CCA P/N [redacted] WITHOUT REMOVING THE CCA FROM THE CHASSIS.
		NOTE: ALL WORK TO BE PERFORMED IN ACCORDANCE WITH WCM VOL II.



SUPPLEMENTAL (APPENDIX D)
STEP-STRESS TEST DATA SHEET

UUT Serial Number (enter MSN): _____ **Test Date:** _____

Tester: (Name & stamp below)

STEP-STRESS Level (enter 0 - 10): _____ _____

UUT PERFORMANCE TEST DATA — PERFORMANCE MONITORING

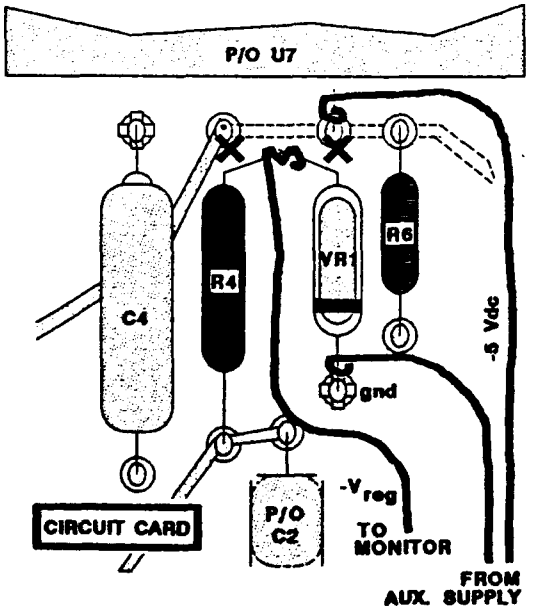
RESISTOR/ZENER DIODE MODIFICATION: At Dwell: For the modified resistor/zener diode subcircuit, record the voltage across the LOAD RESISTOR at this STEP-STRESS Level.

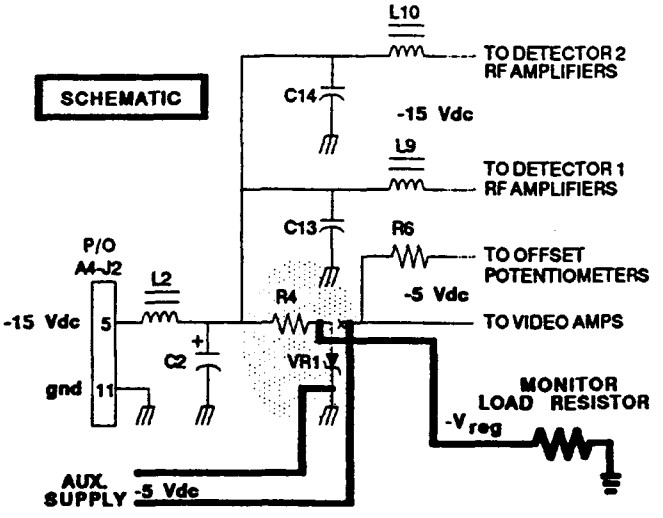
Start TEST: _____ (TIME HR:MIN)

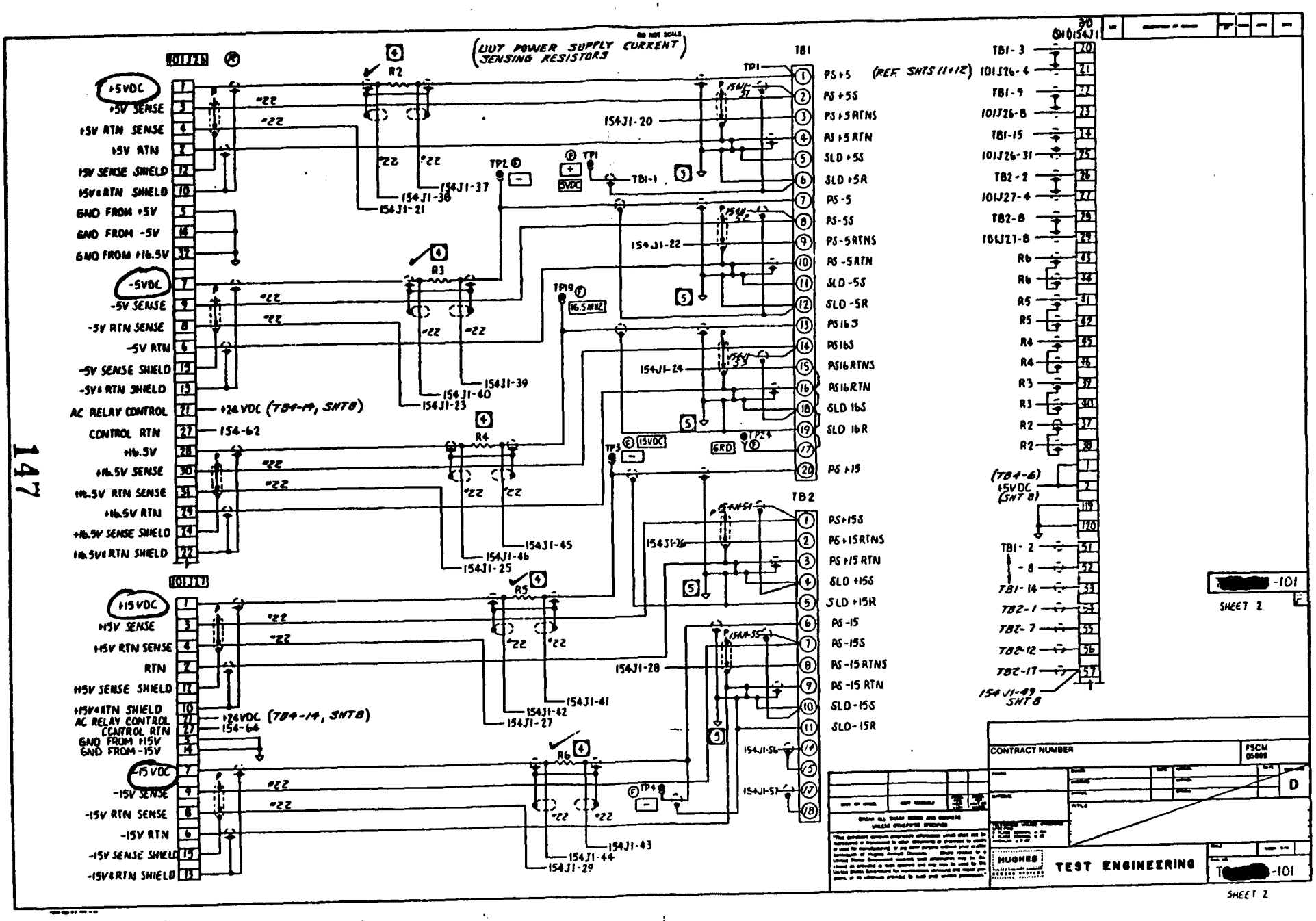
Voltage across LOAD RESISTOR: _____ (Vdc) (refer to *Appendix D*; nominally -5 Vdc)

End TEST: _____ (TIME HR:MIN)

DETAILS: A4 DETECTOR CIRCUIT CARD MODIFICATION
FOR AUX. CONSTANT -5 Vdc SUPPLY
AND R4/VR1 MONITORING






UUT POWER SUPPLY CURRENT SENSING RESISTORS
DO NOT SCALE
+5VDC
+5V SENSE
+5V RTN SENSE
+5V RTN
+5V SENSE SHIELD
+5V RTN SHIELD
GND FROM +5V
GND FROM -5V
GND FROM +16.5V
-5VDC
-5V SENSE
-5V RTN SENSE
-5V RTN
-5V SENSE SHIELD
-5V RTN SHIELD
AC RELAY CONTROL
CONTROL RTN
+16.5V
+16.5V SENSE
+16.5V RTN SENSE
+16.5V RTN
+16.5V SENSE SHIELD
+16.5V RTN SHIELD
+15VDC
+15V SENSE
+15V RTN SENSE
RTN
+15V SENSE SHIELD
+15V RTN SHIELD
AC RELAY CONTROL
CONTROL RTN
GND FROM +15V
GND FROM -15V
-15VDC
-15V SENSE
-15V RTN SENSE
-15V RTN
-15V SENSE SHIELD
-15V RTN SHIELD
+24VDC (TB4-19, SHT8)
154-62
+24VDC (TB4-14, SHT8)
154-64
R2
R3
R4
R5
R6
TP1
TP2
TP3
TP4
TP19
TP24
16.5MHZ
GRD
TB1
TB2
PS +5
PS +5S
PS +5RTNS
PS +5RTN
SLD +5S
SLD +5R
PS -5
PS -5S
PS -5RTNS
PS -5RTN
SLD -5S
SLD -5R
PS16S
PS16S
PS16RTNS
PS16RTN
SLD 16S
SLD 16R
PS +15
PS +15S
PS +15RTNS
PS +15 RTN
SLD +15S
SLD +15R
PS -15
PS -15S
PS -15RTNS
PS -15 RTN
SLD -15S
SLD -15R
154J1-20
154J1-21
154J1-22
154J1-23
154J1-24
154J1-25
154J1-26
154J1-27
154J1-28
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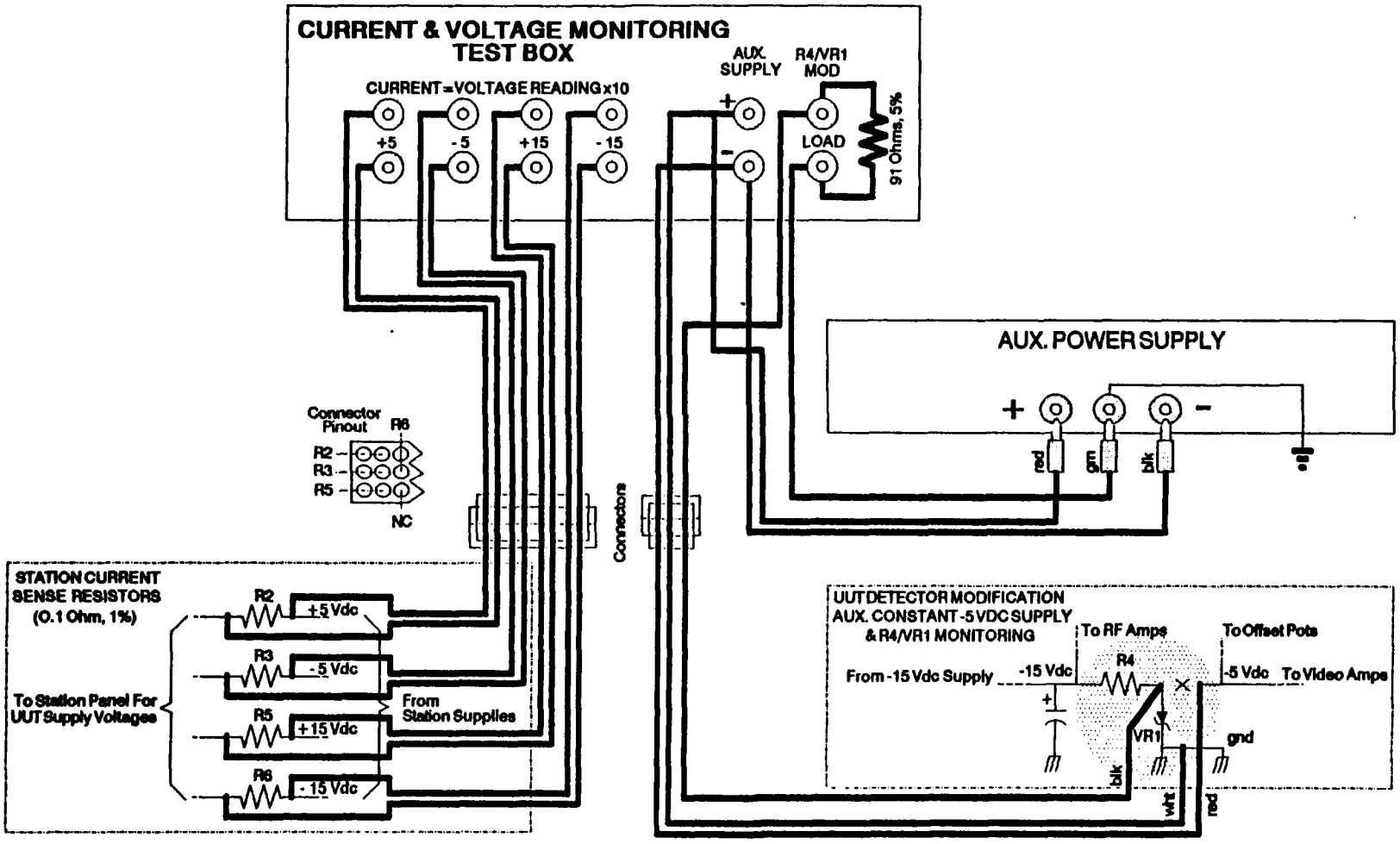
154J1-40
154J1-41
154J1-42
154J1-43
154J1-44
154J1-45
154J1-46
154J1-56
154J1-57
(REF SHTS 11+12)
TB1-3
TB1-9
TB1-15
TB2-2
TB2-8
R6
R5
R4
R3
R2
(TB4-6) +5VDC (SHT 8)
TB1-2
TB1-8
TB1-14
TB2-1
TB2-7
TB2-12
TB2-17
154J1-49 SHT 8
CONTRACT NUMBER
FSCM 05809
D
HUGHES
TEST ENGINEERING
SHEET 2

FIGURE D-7: SPECIAL TEST BOX SETUP



CHAMBER PROGRAMMING GUIDE

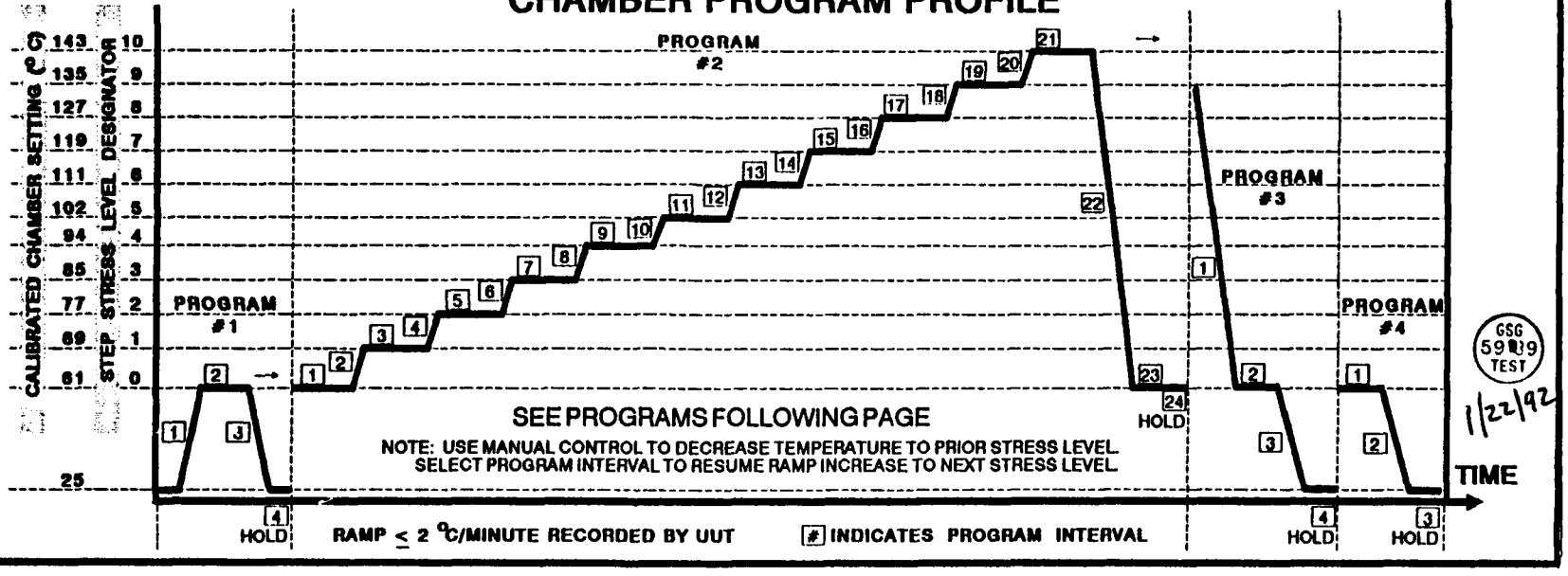
SETTING TEMP ALARMS: Prior to using Chamber, set the LOW and HIGH alarms for auto shutoff in case of over temp condition. Press [SETUP] key. Press the hidden [Y] key located behind the "TROL" letters between the two displays. Press [ENT] key twice. Enter the LOW and then HIGH alarm temperatures (°C). Press [STOP] key to end.

MANUAL MODE OPERATION: Press [STOP] key. (CODE 1 displayed) Press [RUN] key. (PROG/MAN? displayed) Press [MAN] key. Press [4 VALUE] key, until SET-PNT is displayed. Press [EDIT] key. Enter the SET-PNT temperature (°C). Press [ENT] key. Chamber will be driven to setpoint temperature.

TO RUN A PROGRAM INTERVAL: Press [STOP] key. (CODE 1 displayed) Press [RUN] key. (PROG/MAN? displayed) Press [PROG] key. Enter PROGRAM NMBR. Press [ENT] key. Enter INTERVAL number. Press [ENT] key. Toggle [START] key. Chamber should resume with PROGRAM INTERVAL entered.

To verify status press [4 VALUE] or [5 TIME] keys repeatedly to scroll through variables while running program.

CHAMBER PROGRAM PROFILE



TO PROGRAM CHAMBER: Press STOP key. (CODE 1 displayed). Press PROG key.
Enter PROGRAM NMBR. Press ENT key following each value entered.

PROGRAM NMBR	1	2	3	4
INIT VAL 1 (°C)	25	61	133	61
INTERVAL	1	1	1	1
FINAL VAL (°C)	61	61	61	25
INTVL TIME (HR.MN)	0.18	1.0	0.36	0.18
AUX	—	—	—	—
NEXT INT	2	2	2	2
INTERVAL	2	2	2	2
FINAL VAL (°C)	61	69	61	25
INTVL TIME (HR.MN)	2.0	0.01	3.0	1.0
AUX	—	—	—	—
NEXT INT	3	3	3	3
INTERVAL	3	3	3	3
FINAL VAL (°C)	25	69	25	Press STOP key.
INTVL TIME (HR.MN)	0.18	1.29	0.18	
AUX	—	—	—	
NEXT INT	4	4	4	
INTERVAL	4	4	4	
FINAL VAL (°C)		77		
INTVL TIME (HR.MN)	Press STOP key.	0.01	Press STOP key.	
AUX		—		
NEXT INT		5		
INTERVAL		5		
FINAL VAL (°C)		77		
INTVL TIME (HR.MN)		1.29		
AUX		—		
NEXT INT		6		

Continue PROGRAM 2: Repeat INTERVALs 4 and 5 above using VARIABLEs below.

INTERVAL	6&7	8&9	10&11	12&13	14&15	16&17	18&19	20&21
FINAL VAL (°C)	85	94	102	111	119	127	135	143

INTERVAL		22	
FINAL VAL (°C)		61	
INTVL TIME (HR.MN)		0.40	
AUX		—	
NEXT INT		23	
INTERVAL		23	
FINAL VAL (°C)		61	
INTVL TIME (HR.MN)		3.0	
AUX		—	
NEXT INT		24	
INTERVAL		24	
FINAL VAL (°C)			
INTVL TIME (HR.MN)		Press STOP key.	
AUX			
NEXT INT			

1/22/92 GSG 59139 TEST

HOLD key interrupts & holds INTERVAL time and temperature. RUN key continues program INTERVAL.

APPENDIX C

Conformal Coating Analysis

HUGHES AIRCRAFT COMPANY

INTERDEPARTMENTAL CORRESPONDENCE

TO: D. Huch
ORG: 1A-62-XX

cc: Distribution

DATE: 13 February 1992
REF: 92/1A72.30/002

SUBJECT: Step-Stress Test Units
Discoloring of Conformal Coating
and Reliability, Post Stress Test

FROM: S. D. Mueller
BLDG: 675 MAIL STA: Z314
EXT: 1-8360 ORG.CODE: 1A-72-30

BACKGROUND: Two (2) out of the seven (7) production R/T modules have been Accelerated Step-Stress tested per the Test & Acceptance Plan. The first unit, MSN 1030, was taken to Level 10 and then Level 11 to reach catastrophic failure. The second unit, MSN 1023, completed Level 10 without failure. Both units tested showed visible discoloring of the conformal coating. The polyurethane coating appears scorched, having a orange-brown color, over the entire unit surface. The appearance is similar to a hot coffee cup being placed upon a coated table and leaving a ring on the furniture's finish. A scrapped circuit board was placed in the thermal chamber with MSN 1023. The board's polyurethane coating began to yellow at the exposure air temperature of Level 9 & Level 10 (+140 °C). The discoloring of the test units is unacceptable to D. Ragle (who is responsible for this hardware), and makes these units depreciate significantly in value.

TASK ASSIGNMENT: Under direction from D. Ragle and D. Huch, engineering was tasks to determine the temperature level where this discoloring would be, at most, minimized to localized areas (allowing spot rework on few component surfaces) or yellowing throughout (also typical of units whose coatings have aged).

ANALYSIS:

R. Patterson (component/material engineer) has tested MSN 1023 and another unit MSN 815 (for comparison) for dielectric strength and coating thickness. The discolored coating of MSN 1023 was found to be acceptable per MIL-SPEC requirements. The unit's polyurethane coating had not carbonized (no burning) and showed no sign of breakdown when subjected to 6000 Volts through its 6 mil thickness. The MIL-SPEC indicates that usage is specified for indefinite operation to +130 °C. Color is not a criteria. D. Hahn (product operations) inspected MSN 1023 and found no defects or imperfections as judged to Hughes workmanship criteria. Again, no requirement for color exists. The exposure of the conformal coating, although in excess of its +130 °C spec, shows no degradation in performance or to its workmanship requirements.

S. Mueller (design & test plan engineer), using the MIL-SPEC +130 °C requirement for operation and the scrapped board's exposure of +140 °C for yellowing, determined that testing of the remaining units would have to be reduced to Step-Stress Level 6 or Level 7 to minimize the discoloring of the polyurethane coating. The attached figures and graphs illustrate these Levels as they apply to the Test & Acceptance Plan for Accelerated Step-Stress Testing.

Component case temperatures will exceed +130 °C at Level 6 (see excerpt Figure 2.3.1). Coating not in direct contact with components will have uniform air temperature exposure of +130 °C by Level 7. At

Level 7, yellowing will have occurred on components due to case temperatures exceeding +140 °C and browning may occur in some locations. The component case temperature information cited was taken from thermocouple data obtained from the Trial Test Runs of 25 November through 27 November 1991 and 17 December 1991. The Trial Test Run of the Step-Stress Test was conducted on a similar unit and provided the basis for the thermal criteria of the Test & Acceptance Plan. This similar unit, MSN -100/349, was not conformally coated and compartment air temperatures will be slightly increased on the -103 configuration units (ie., MSN 1023, 1030, 815, and four others) due to their coating. Above Level 7, browning will continue and be more widespread.

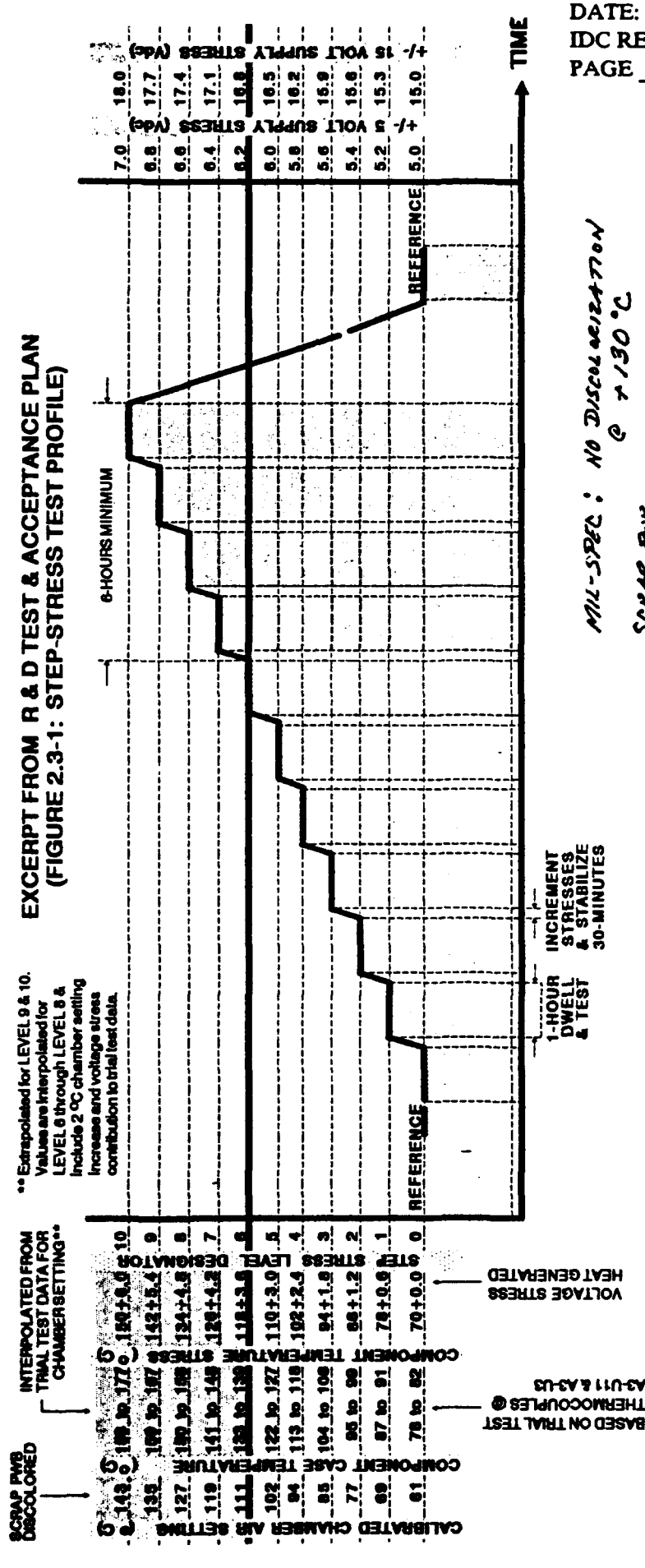
LIMITATIONS ON R & D: Reducing the unit exposure to Level 6 or Level 7 should minimize discoloring of the polyurethane conformal coating on future test units, and alleviate the concerns of D. Ragle and D. Huch. Reduction of the temperature stress will require a change to the Test & Acceptance Plan for future test. Using Level 6 as the maximum stress would only stress 8% of the components to their maximum survival temperature extremes (see excerpt of Figure 2.2-1). With Level 7 used as the extreme, this would increase to include 38% of the components. The original scope of the Test & Acceptance Plan, and the approach guided by the Process Action Team members, was to provide testing up to the units *Design Limit* which at present includes Level 10 and imposes accelerated stress upon 90% of the components. With the reduction of stress to Level 6 or Level 7, we will be repeating the approaches utilized by the prior two test participants (testing only to maximum *operating* specifications rather than *survival* extremes) and contribute little to the research and development of Accelerated Step-Stress Testing.

REMARKS: The browning of the conformal coating of MSN 1023, and likely MSN 1030 (not analyzed), does not indicate a degradation in the ability of the conformal coating to provide its intended function. The question remaining, however, is what the Level 10 stress environment exposure has had upon the component life of these units. By plan, these units were exposed to stresses in excess of their specified operating limits with the intent of subjecting them to extreme stresses that would accelerate failure. These units have not been evaluated, as yet, to determine the extent of damage which may have been sustained during test which could show up during a second pass of the Step-Stress Test or could happen if these units were fielded as production spares in the future. It is recommended that MSN 1023 and 1030 never be used in any situation requiring the same performance reliability as a new production unit.

sdm:sm

Distribution:

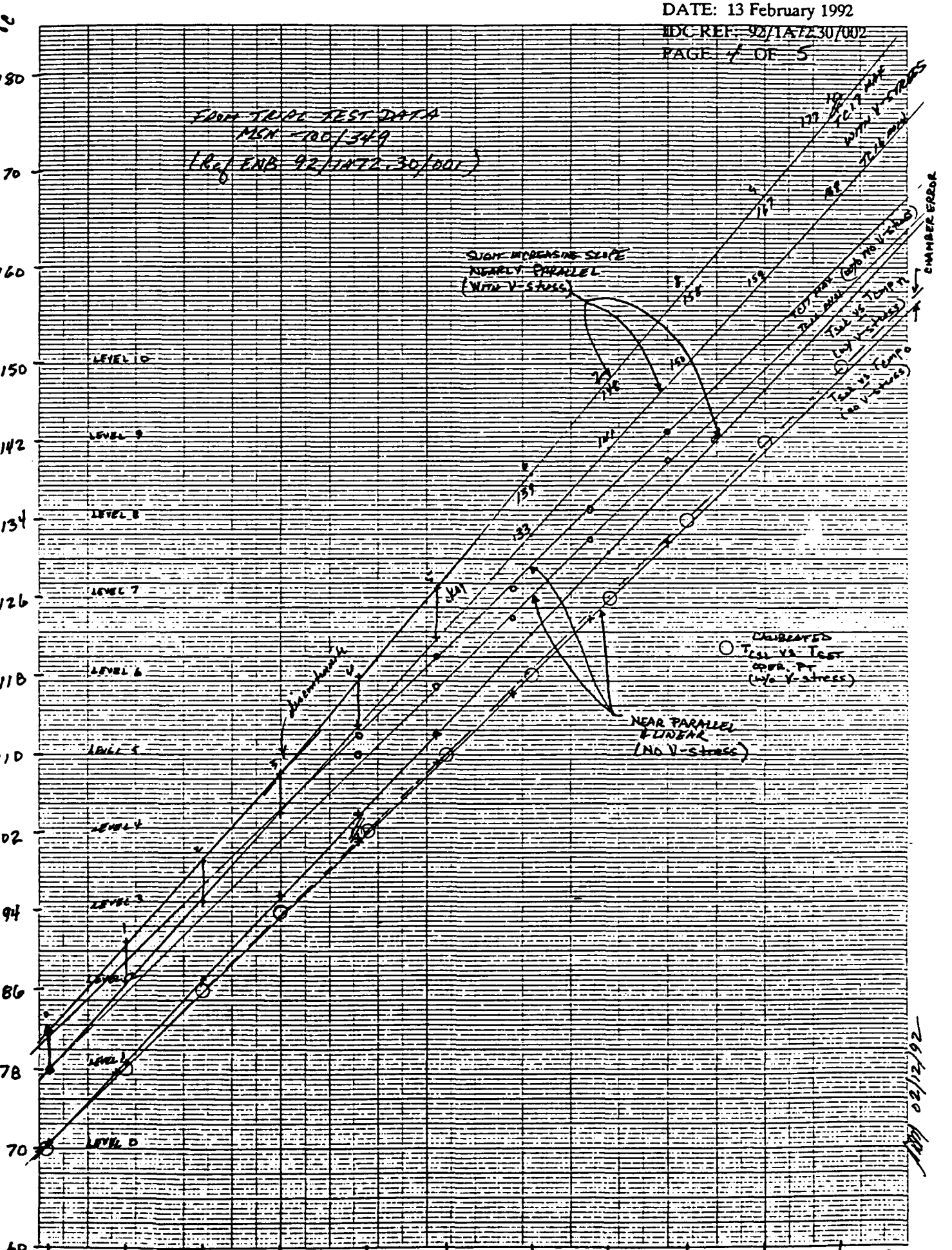
D. H. Ragle
S. R. Burnett
L. E. James
R. F. Patterson
D. T. Hahn
H. W. Homme



MIL-SPEC : NO DISCOLORIZATION @ +130 °C

SCRAP PWB : SLIGHT YELLOWING @ +140 °C (chamber set @ +143°C)

DATE: 13 February 1992
IDC REF: 92/1A72.30/002
PAGE 4 OF 5

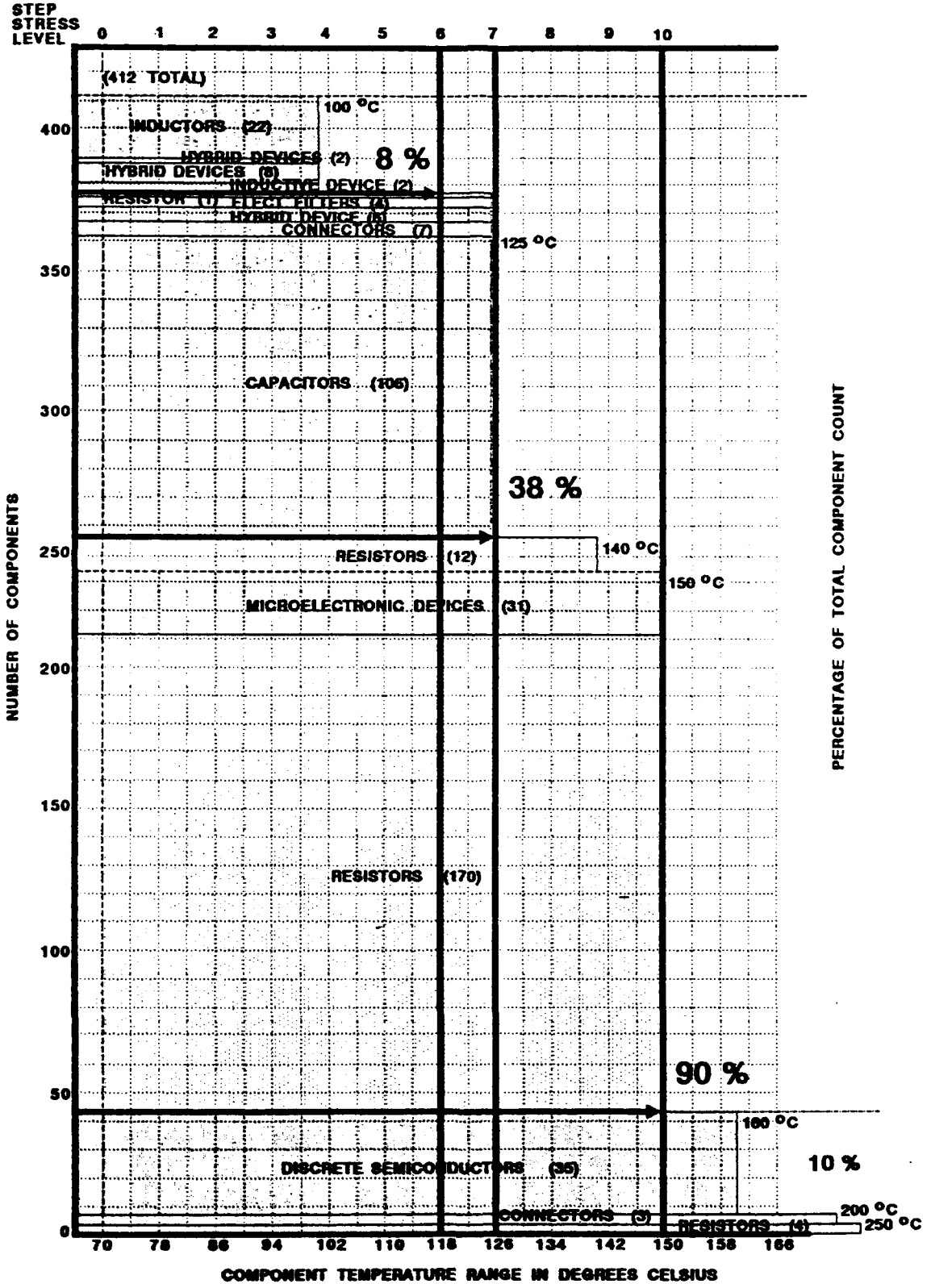


461510

10 X 10 TO THE CENTIMETER
KEUFFEL & ESSER CO. MADE IN U.S.A.

4 of 5

EXCERPT FROM R & D TEST & ACCEPTANCE PLAN
(FIGURE 2.2-1: MAXIMUM SURVIVAL TEMPERATURE EXTREMES FOR UUT COMPONENTS BY DEVICE TYPE)



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